WASHINGTON STATE DEPARTMENT OF ECOLOGY

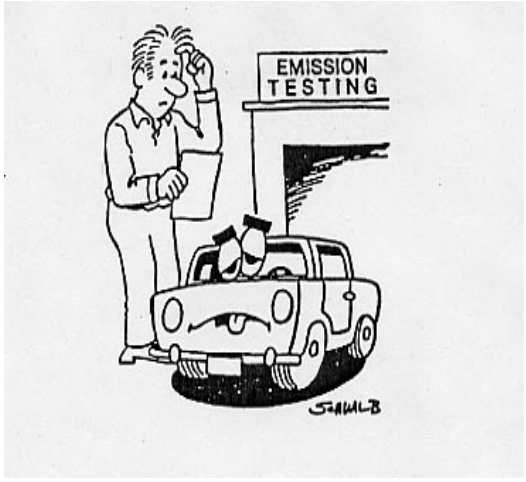
Emission Check

You're on the Road to Cleaner Air.

Handbook

for

Authorized Emission Specialists
and
Authorized Repair Facilities



"Take me to an AES"

Washington State Department of Ecology
Air Quality Program
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Please remove the staples and put this handbook into a three-ring binder. Keep it on hand for reference.

Ecology phone numbers are on the bottom of each page, starting with the Introduction page.

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Introduction:

The Emission Check Partnership

Thank you for participating in the Emission Check Program. This air pollution control program has two sides: inspection and maintenance. Most motorists see only the inspection side, the test station. But, thanks to maintenance and repair work performed by the automotive service industry, emissions are being lowered. State law separates the inspection and the maintenance sides of the Emission Check Program to avoid conflict of interest. The private contractor that runs the inspection stations has no financial interest in repairing and maintaining cars and trucks. The task of "cleaning up" vehicles with "dirty" emissions occurs in private repair shops and service departments.

You make cars run cleaner

How important is the industry's participation? According to the Department of Ecology review of Emission Check Program records, repaired vehicles showed average emission reductions of 73% for carbon monoxide and 75% for hydrocarbons.

Even attempted repairs that result in waivers help. Waived vehicles showed average emission reductions of 37% for carbon monoxide and 14% for hydrocarbons.

Results like these make it clear that appropriate repairs directed at reducing emissions make a major difference. These repairs to the dirtiest vehicles make the entire group of vehicles in the Emission Check Program more than 20% cleaner. This helps keep the air healthy for everyone.

We help each other

Your participation in the Emission Check Program is 100% voluntary. But when you join, there are rules to ensure fair play and maintain consumer confidence. Ecology authorizes both emission repair specialists and facilities. The shops can't be authorized without specialists. A specialist may perform Emission Check work only as an employee at an authorized shop.

In return, Ecology provides the following for shops and technicians in the Emission Check Program:

- A **list of nearby Emission Check shops** for each motorist whose vehicle fails an inspection. Each year, statewide, more than 160,000 vehicles are referred to authorized shops.
- **Technical support** to these shops and specialists. This support is available through your local field office or the technicians' hotline. Emission Check technical staff are experienced, qualified automotive technicians. No question is too small. When in doubt about a part, procedure, or problem, don't guess, ***ASK.*** The phone numbers are on the bottom of each page starting with the Introduction page of this handbook. Your Ecology Emission Check field staff representative always has access to telephone messages.

- Maintenance of customer confidence in the program, as a whole, by:
  - Providing regular quality assurance of each shop's emission analyzers and Emission Check Recordkeeping.
  - Taking appropriate action when technicians or shops act improperly.

Save and use this handbook

There are three parts to this manual:

- **Part I** explains the Emission Check rules and policies that apply to participating automotive repair businesses.
- **Part II** offers practical information and tips from Ecology's Emission Check field staff.
- **Part III** is a reference guide, with full text of rules, maps, charts, and other important information.

This handbook describes how Washington's Emission Check system works. The regulations the program is based are Chapters 173-421 and 173-422 of the Washington Administrative Code (WAC), printed in full in this handbook. This handbook does not replace technical training or experience. Your skills and background are important. They help keep Washington State a healthy place to breathe.

Your copy of this handbook comes loose-leaf. Please remove the staple and put these pages into a three-ring binder. When there's a need to revise the handbook, Ecology will send updated information or new pages.

Thanks again for participating in the Emission Check Program. I wish you much success in helping your customers drive cleaner, better running vehicles.

Stu Clark, Program Manager
Air Quality Program
Department of Ecology

Chapter 1: The Basics

What is the Emission Check Program?

Emission Check helps keep unhealthy air pollution under control. It is part of the same national strategy that requires car makers to build vehicles with pollution controls. Inspection and maintenance (I/M) programs like Emission Check help make sure that each vehicle's emission control system is doing its job. Parts of the country that have had air pollution problems use I/M programs to attain or maintain good air quality.

History: Emission Check began in Seattle and its suburbs in 1982, and then in Spokane and some suburbs in 1985. In 1993, responding to changes in the federal Clean Air Act, Ecology expanded the program in Washington to include the Vancouver area, more of Spokane's suburbs, and more of the Puget Sound region. Emission Check now extends from Marysville and Lake Stevens in Snohomish County to Dupont and Graham in Pierce County. Also in 1993, diesel vehicles were added to the program. Maps of program areas/and a list of Emission Check station locations are included in this handbook**.**

The inspection: For gasoline vehicles, the program tests for hydrocarbon and carbon monoxide emissions. It sets maximum standards for both pollutants. Carbon dioxide is also tested to validate each inspection. Originally vehicles were tested at idle. Later vehicles were inspected at two speeds: at idle and at 2500 RPM. In 1993, the high-speed phase of the inspection changed for light-duty two-wheel drive vehicles with the introduction of cruise-mode dynamometers. This made it possible to test most vehicles as if they were being "driven" in gear in a simulation of real driving. In 1997, the dynamometer test changed in Spokane and Clark counties. Vehicles there receive acceleration simulation mode (ASM) tests which simulate acceleration rather than cruising. Diesel vehicles are tested for smoke density (opacity), using a series of snap-idle tests.

In 2002 all gasoline light duty trucks and cars required to emission test must also pass a gas cap test. Also, ASM 25/25 dynamometer testing will be required on most 1980 through 1995 light-duty vehicles in the Puget Sound Region. All 1996 and newer gasoline light-duty trucks and cars that require an emission test will be OBDII tested.

Changes in test model years and opacity readings for heavy-duty diesel trucks. Light-duty diesel trucks and cars less than (8500 GVWR) will be tested on an ASM 25/25 dynamometer, with a maximum opacity standard of 20%.

Vehicles affected: All gasoline and diesel cars and light-duty trucks five years old and up to 25 years, that are registered in an Emissions Check area must have an emission inspection every other year before they receive new license plate tabs.

Starting with 1996 model year vehicles, the test year cycle has changed. This exception puts odd-year vehicles on an even-year test cycle and even-year vehicles on an odd year-test cycle.

A passing Emission Check certificate is valid for twelve (12) months.

The Emission Check fee is $15 cash (No Canadian funds), check (traveler's checks maximum $50.) or credit card (MC, Visa, Discover). The fee includes one free retest, but after that each inspection is $15.

Vehicles that fail: Well over 85% of all vehicles pass the first inspection. If the vehicle fails, the driver receives a list of Ecology authorized repair shops. Most vehicles pass the retest after receiving appropriate repairs or diagnosis.

Emission Check's goal is to reduce emissions. There is no restriction on who performs repair work, so long as the vehicle passes a retest. But to be eligible for the waiver program, repairs must be performed as follows.

Waivers: A vehicle owner may obtain a waiver after making a reasonable effort to have the vehicle repaired or properly diagnosed. To be eligible for a waiver, these repairs or diagnosis must be made by an Ecology authorized emission specialist at an authorized repair shop. The waiver program allows motorists to avoid costs that many cannot afford. Waivers are issued by test station staff and, in certain cases, by Ecology. Less than two percent of all vehicles inspected receive a waiver.

Telephone help: Motorists may call Ecology's Emission Check staff at any of the numbers listed at the bottom of the pages of this handbook with any questions or concerns.

Air Pollution

What is air? Perfectly pure air contains about 78% nitrogen, 21% oxygen, and one percent other gases, plus water vapors. The oxygen in the air keeps people and animals alive. The nitrogen is inert; it doesn't help and it doesn't hurt. Most of the other gases, but not all, are harmless, too.

How much air does a person need? Each day you breathe about 35 pounds of air. That's about 3400 gallons a day or two gallons a minute. Compare that to your need for water; several glasses a day. Without water, you can live a few days. Without air, you may last a few minutes at most.

What is air pollution? Air pollution, in one form or another, has always existed. In nature, pollution comes from volcanoes, dust storms, decaying vegetation, and even evergreen forests. People cannot control this kind of pollution. But *we can* control the types of pollution *we* cause. Air pollution can affect our health at relatively low concentrations measured in parts per million or billion, depending on the pollutant.

How much do automobiles pollute the air? Vehicles contribute a large share of the air pollution caused by humans. Vehicles contribute about half the hydrocarbons (HC) and oxides of nitrogen (NO_x) and three quarters of the carbon monoxide (CO).

How much air pollution is too much? Since even nature does not produce perfectly pure air, people cannot expect to eliminate all pollution. The federal government has set health standards for the outdoor air. These standards set limits on how much of each of the major pollutants the air can contain and still not cause health problems. Pollution control efforts aim to meet these health standards.

How are automobile emissions controlled? Since 1968, the U.S. Government has required auto makers to control the amount of pollution in the exhaust. The car makers redesigned parts of the engine and developed emission control systems. Today's cars produce more than 90% less pollution than those built before pollution controls began.

Why do only some places have emission inspections? Most air pollution problems occur in and around large cities where most of the people and automobiles are. Based on air pollution monitoring, the U. S. Government has declared "non-attainment" areas in places that have had trouble keeping air pollution within the health standard. In these non-attainment areas, the U. S. Government requires states to take care to improve air quality. Pollution from automobiles contributes to the problem, on of these steps is motor vehicle emission inspections. If a non-attainment area succeeds in achieving good air quality, it becomes a "maintenance area" and I/M programs often remain in place to help keep air pollution under control.

What are the problem emissions from cars and trucks? In Washington, they are carbon monoxide and hydrocarbons from gasoline vehicles, and fine particles from diesel vehicles.

- **Carbon monoxide** is produced in large quantities by the automobile. It is a result of incomplete combustion of gasoline. It is a colorless, tasteless, odorless gas that displaces oxygen in the blood. The highest levels occur in cities where traffic is concentrated. The most likely times for high carbon monoxide levels are the calm, cold periods between storms in the winter.
- **Hydrocarbons** are vapors of unburned gasoline. They can irritate the eyes and some hydrocarbons are known or suspected causes of cancer and other health problems. On sunny, hot days they mix with other air pollution to form ozone smog at ground level. (This is not the same as the depletion of the ozone layer high in the atmosphere). Ozone irritates eyes and breathing passages, and harms crops and forest. The most likely times for high ozone levels are on clear, calm hot summer days.
- **Fine particles** are produced by diesel engines. The particles are too small to see with the naked eye except when concentrated as smoke. They can be present even when there's no obvious smoke. The particles are easily inhaled deep into the lungs and can damage the delicate tissue that allows oxygen to pass from the air to the blood. Also, toxic chemicals can "hitchhike" into the lungs on these particles. The most likely times for high fine particle levels are during periods of calm weather.

Gasoline engine emission controls

Each 1968 and newer gasoline vehicle is equipped with a system designed to reduce the vehicle's overall emissions. Not all models have the same devices and the parts may have different names, depending on the car maker.

Emission controls reduce three basic pollutants:

- **Hydrocarbons (HC) –** result from incomplete combustion. Hydrocarbons are unburned fuel.
- **Carbon monoxide (CO) –** results from partial combustion, usually due to too much fuel in the air-fuel mixture.
- **Oxides of nitrogen (NO_x) –** caused by temperatures above 2500 °F in the combustion chamber.

Common emission controls

PCV Positive Crankcase Ventilation Valve. Recirculates crankcase vapors.

FEC Fuel Evaporation Control. Stores unburned gasoline vapors in a charcoal canister and releases them later to be burned in the combustion chamber.

EGR Exhaust Gas Recirculation Valve. Uses exhaust gases to control combustion chamber temperature and reduce NO_x emissions.

CAT Catalytic Converter. Reacts with exhaust gases to change HC, CO, and NO_x to carbon dioxide and water.

AIR Air Injection Reaction. Reduces emissions by injecting fresh air into the exhaust or the converter.

Carburetor or Fuel Injection. Combines fuel with air in proper proportions. On later models this mixture is computer controlled.

TAC Thermostatic Air Cleaner. Adjusts the temperature of air before it gets to the fuel system. Promotes more efficient burning and lowers CO and HC emissions.

Computer and sensor. Sensors collect information on engine conditions. The computer adjusts various settings for efficient operation and lower emissions.

The PCV (positive crankcase ventilation) systems and air pumps were introduced during the 1960s, and evaporative controls, EGR (exhaust gas recirculation), and catalytic converters evolved during the 1970s. Since the 1981 model year, many vehicles use computers to control the engine and its emission control systems.

There are two basic kinds of emission control systems:

Non-feedback systems (most 1980 model vehicles). The air-fuel ratio is fixed by design. Adjustments, such as the idle mixture, are set at the factory or by the repair technician.

Feedback or "closed loop" systems (began with some 1981 models and gradually became more common). Sensors measure various conditions in the engine and exhaust. A computer then adjusts various settings using this information. Feedback systems contain three basic components: sensor, the computer, and actuators.

- Sensors provide engine operating information to the computer.
- The computer contains information on how best to calibrate the different settings in the engine.
- Actuators are the devices that respond when signaled by the computer.

Both feedback and non-feedback systems may use some of the emission devices mentioned above.

Chapter 2: General Requirements

Authorized Emission Specialists

An Authorized Emission Specialist (AES) must be familiar with Chapter 173-421 WAC and Chapter 173-422 WAC, printed in full in this handbook.

To become an AES, one must:

- complete a course of study and / or pass an examination meeting Department of Ecology requirements; and
- sign an Inclusion document agreeing to abide by the requirements for an AES.

When these two steps have been completed, Ecology issues an AES certificate to the technician. The certificate contains the specialist's number and an expiration date. It also states whether the specialist is authorized for gasoline or diesel engines or both. Before your certificate expires, make sure your training is up to date if you wish to continue in the AES program.

Training is available:

- **Gasoline specialists:**
  - **Ecology works with community colleges,** technical colleges and other training centers to provide quality training that is affordable and convenient. At the time of this printing, a number of community colleges, technical colleges, and private contractors offer Ecology approved courses and exams.
  - **Ecology also approves other training.** Contact Ecology for training opportunities or courses available for the Washington Emission Check requirements. At the time of this printing, Ecology approves the ASE L 1 exam and other auto manufacturers training courses, for technical certification, to be followed by the Ecology exam. If you've taken one of these courses or tests, please provide your Ecology Emission Check field office with a copy of your certificate from that program. For more approved training, call Ecology. You will then need to study this manual and take a short exam to show your knowledge of the state requirements.
- **Diesel Specialists:** Ecology's staff provides training and exams. Contact your Ecology diesel representative.

Check with your local Ecology Emission Check field office for current training information in your area.

To maintain certification, an AES must:

- **Complete a course of study and / or pass an examination** approved by Ecology on emission repair within 12 months of being required to do so by Ecology.
- **Perform "appropriate repairs."** "Appropriate repairs" means to diagnose the cause or causes of an Emission Check failure and to repair one or more of those causes. An appropriate repair should reduce at least one emission test reading, without a major increase in the other, or have proper diagnosis if no improvement is expected; (compression test, compression leak down, catalytic converter test, etc).
  - For example, if the vehicle fails HC, but passes CO, your repairs or adjustments should reduce its HC reading without raising its CO.

- **Work as an AES at only one Emission Check authorized shop.** You may sign receipts and Emission Check test forms only for your own work at that shop.
  - Notify Ecology when you change employment.
- *Gasoline specialists:* **Use only an exhaust analyzer that meets Ecology's requirements.** It must pass an Ecology-approved accuracy check at least monthly. Notify your management if the analyzer needs maintenance or repair. Ecology must be notified within 24 hours if the analyzer is not functioning properly.
- *OBD II:* The OBDII scanners must be capable of duplicating the OBDII test failures. There are four areas:
  - Retrieve the Status of Non-continuous monitors for readiness.
  - Diagnostic Trouble Codes (DTC) present.
  - The MIL light (check engine) commands.
  - Retrieve Generic OBDII (DTC) codes that are set and have commanded the MIL to illuminate.
- *Diesel specialists:* You do not need an opacity meter to check repairs. (But authorized self-test facilities *must* have Ecology-approved testing equipment). If you "eyeball" emissions, base your readings on an opacity chart or similar guide.
- For every Emission Check repair job, do each of the following:
  - **Use a pre-printed invoice/receipt form** that is pre-numbered and preprinted with the name and address of the authorized Emission Check shop where you work.
  - **Itemize** all appropriate emission repairs or diagnosis you performed.
  - *Gasoline specialists:* **Record the vehicle's emission readings** after appropriate diagnosis or repairs or list the OBDII codes on customer's copy of the receipt.
  - **Describe the vehicle,** including its license number, vehicle identification number and odometer reading.
  - **List** the customer's name, address and phone number.
  - **List** any missing or inoperative primary emission control components.
  - **List** any further appropriate emission repairs you recommend. Ones that if completed, the vehicle would pass a Washington State Emission Test.
  - **Sign** and clearly write your AES number on the receipt.
- **When your customer** brings a Vehicle Emission Test Report from the Emission Check station, complete the repair information section on the bottom of the front side. Neatly print your AES number, your name, and the date and time. Sign the form.
- **Include your AES number** on any other forms required by Ecology that you must sign.
- **Never tamper** with emission control systems, including adjusting an engine outside the manufacturer's specifications.
- **Do not** obtain or attempt to obtain a certificate of compliance (passing test report), certificate of acceptance (repair waiver) or an exemption from Emission Check requirements by providing false information or by any fraudulent means.

- **Do not violate** or help someone else to violate Chapter 173-421 WAC (illegal engine switching or alterations of emission control components) or Chapter 173-422 WAC (overall Emission Check program).

Ecology may revoke an authorized specialist's certification. Under certain circumstances, Ecology may suspend or permanently remove a specialist from the Emission Check Program.

- If you violate Chapter 173-421 WAC (illegal engine switching or alterations of emission control components) or Chapter 173-422-145 WAC (fraudulent repair waivers), your certificate can be suspended for up to one year for a first offense and permanently revoked for a second offense.
- If you violate WAC 173-422-190(2), described earlier in this chapter in "To maintain certification", Ecology may suspend your certificate. For continued willful violations, Ecology may permanently revoke your certificate.
- If your certificate is suspended or revoked, you have the right to appeal to the Washington State Pollution Control Hearings Board within 30 days.
- If your certificate is temporarily suspended, you may apply for a new certificate one year after the date of suspension. You must meet all the requirements outlined earlier in this chapter in "to become an AES."
- Ecology will not issue a new certificate to someone whose AES certificate was permanently revoked.

Authorized Emission Check Repair Facilities

Overview: Repair shops and service departments may become Authorized Emission Check repair facilities if they:

- **Employ** at least one Authorized Emission Specialist;
- **Own and properly maintain** an Ecology-approved exhaust analyzer (*gasoline shops only),* and a generic OBD II scanner, as explained earlier in this chapter; and
- **Allow** Ecology Emission Check field staff to visit and inspect; and
- **Agree,** by having management or the owner sign a Business Inclusion agreeing to abide by Emission Check requirements and policies.

The part of the Emission Check regulations that applies to repair facilities is WAC 173-422-195.

When the owner or manager signs an application and Ecology certifies that all requirements are met, the business is issued a number and listed as an Authorized Emission Check Repair Facility.

The listing will state whether the facility is authorized for gasoline, or diesel engines or both.
Ecology will issue and publish the business' name and address in a packet given to motorists whose vehicle fails inspections at Emission Check stations. The business may be subject to certain limitations. They may advertise as an Authorized Emission Check repair facility. Also, check out the Ecology Web site at: **http://aww.ecydev/programs/air/cars/automotive_pages.htm**.

Ecology publishes lists of authorized shops and specialists:

- The driver of every vehicle that fails at the Emission Check station gets the most current list of authorized shops in the area. Instructions on the list advise motorists they must patronize one of these shops in order to participate in the repair waiver program.
  - The list includes a complete customer check list of the repair waiver process.
  - For the customer's convenience, Ecology publishes separate diesel and gasoline lists.
  - Each list is updated as needed. In King and Snohomish counties, 5000 updated gasoline shop lists are published every three to four weeks. In smaller areas, the schedule is less frequent.
- A much longer and more detailed list is available for anyone to review at each Emission Check station. It lists all Emission Check authorized shops, with the names of the authorized diesel or gasoline specialists who work there. It is available for viewing at the customer service desk in the station office. You may also obtain this information from Ecology's website at: **http://aww.ecydev/programs/air/cars/automotive_pages.htm**.

To get and stay on the list, the owner or manager of a repair shop or service department agrees and promises to follow these rules and policies:

- **Familiarize** management with Chapters 173-421 WAC and 173-422 WAC.
- **Employ** at least one Ecology Authorized Emission Specialist.
  - Display the specialist's AES certificate where customers can see it.
- *Gasoline shops:* **Properly maintain and use** a correctly calibrated exhaust analyzer.
  - The shop supplies its own calibration gas and regulator for analyzer accuracy checks.
  - Each analyzer must be checked for accuracy at least monthly. Use the Monthly Analyzer Accuracy Report log provided by Ecology.
  - Notify Ecology within 24 hours if the analyzer is not functioning properly.
  - At the conclusion of maintenance or repairs, readings from an Ecology approved, properly calibrated analyzer must be written on the customer's invoice / receipt.
- *OBDII shops:* **A scan tool capable** of communicating with the on-board diagnostic (OBD) systems installed on all U.S. Environmental Protection Agency certified 1996 model year and newer gasoline vehicles to diagnose emission test failures and as a final check for emission repairs or adjustments.
- *Diesel shops:* **Your authorized diesel emission specialist** does not need an opacity meter to check repairs. (But authorized self-test facilities *must* have Ecology approved testing equipment.) Specialists who "eye-ball" emissions, should base their readings on an opacity chart or similar guide.
- **Only an AES who works for you** may perform repairs, diagnosis or maintenance in your shop that can qualify for an Emission Check waiver.
  - **An AES may not sign for work done by anyone else.** Do not ask or order an AES to sign for someone else's work.

- **Your AES should perform "appropriate repairs."** This means to diagnose the cause or causes of an Emission Check failure and to repair one or more of these causes. An appropriate repair should reduce at least one emission test reading, without a major increase in the others, or have proper diagnosis if no improvement is expected.
  - For example, if the vehicle fails HC, but passes CO, your AES's repairs or adjustments should reduce its HC reading without raising its CO.
- For every Emission Check repair job, your AES must:
  - **Use a pre-printed invoice / receipt form** that is pre-numbered and preprinted with the name and address of your business.
  - Itemize all appropriate diagnosis or repairs he or she performed.
  - *Gasoline specialists:* **Record the vehicle's emission readings** after appropriate Emission Check repairs or the diagnosis and/or repair of problem(s) identified by the on-board (OBD) during an emission inspection.
  - **Describe the vehicle,** including its license number, vehicle identification number and odometer reading.
  - **List** the customer's name, address, and phone number.
  - **List** any missing or inoperative emission control components.
  - **List** any further appropriate emission repairs or diagnosis he or she recommends, that the vehicle needs to pass an emission test.
  - **Sign** and clearly write his or her AES number on the receipt.
- **When your customer** brings a Vehicle Emission Test Report from the Emission Check station, the AES must complete the repair information section on the bottom. The AES should neatly print his or her AES number, name, the date and time, and sign the form.
- **On any other forms** required by Ecology that your AES must sign, he or she must include his or her AES number.
- **Do not allow tampering** with emission control systems, including adjusting an engine outside the manufacturer's specifications.
- **Do not** provide nor allow your staff to provide false information or use fraudulent means to obtain, or attempt to obtain, a certificate of compliance (passing test report), certificate of acceptance (repair waiver) or an exemption from Emission Check requirements.
  - All emission control equipment must be intact, in place, and operational or a vehicle is not eligible for a waiver.
- **Do not allow** violations of Chapter 173-421 WAC (illegal engine switching or alterations of emission control components) or Chapter 173-422 WAC (Overall Emission Check program).
- **Allow Ecology Emission Check staff access** to your facility during normal business hours. Ecology staff will check:
  - The accuracy of your exhaust analyzer, as well as calibration / repair records and your calibration gas supply.

- The status of your repair staff, relating to the Emission Check Program.
- The procedures your shop uses, relating to the Emission Check Program.
- The status of your OBD scanner equipment, relating to the Emission Check Program.

■ **You may represent and promote** your business as an authorized Emission Check repair facility. In advertisements, you may state that your business is an authorized Emission Check repair facility and you may reproduce the Emission Check logo. But **you must be able to change your advertising statements immediately** if Ecology removes or suspends your business from the Emission Check Program.

- Don't mention or promote your shop as Emission Check authorized in phone book ads, calling cards, pre-printed invoices, etc. These can't be changed quickly.

■ **Ecology does not** approve, endorse, or recommend shops.

■ **Give your customers** the most accurate and appropriate information possible.

- If your customers do not have direct contact with your AES, Ecology strongly urges you to see that your customer service staff is well versed with Washington's Emission Check requirements.
- Ecology recommends that your customer service staff understand this handbook's information on Emission Check basics, waivers, tampering, change in ownership of used vehicles, common customer concerns**,** oxygenated gasoline available statewide, but required in Spokane County only**,** test station information, terms in the glossary**,** and Washington's auto repair law.
- Contact your Ecology representative for information on optional, but recommended, training for service writers and customer relations staff.

Ecology may remove a shop from the list of authorized shops. Under certain circumstances, Ecology may suspend or permanently remove a shop from the authorized shop list and require the business to stop advertising as Emission Check Authorized.

■ If your business violates Chapter 173-421 WAC (illegal engine switching or alterations of emission control components) or 173-422-145 WAC (fraudulent repair waivers) your shop's name can be suspended from the list for up to one year for a first offense and permanently removed for a second offense.

■ If your business violates 173-422-195(2) WAC, which is described earlier in this chapter, in "To get and stay on the list," Ecology may suspend your shop's listing. For continued willful violations, Ecology may permanently remove your facility's listing.

■ If your facility's listing is suspended or removed, you have the right to appeal to the Washington State Pollution Control Hearings Board within 30 days.

■ If you shop's listing is temporarily suspended, you may apply for a new listing one year after the suspension. You must meet all the requirements outlined earlier in this chapter, in "to get and stay on the list."

■ Ecology will not restore a shop to the list that has been permanently removed.

■ If your shop is removed from the list, you must immediately change any advertising so that it no longer says that your shop is an authorized facility.

- If you do not make this change immediately, Ecology can assess a civil penalty of up to $250 for each violation.
- You have the right to appeal any civil penalty imposed by Ecology to the Washington State Pollution Control Hearings Board within 30 days.
- Be certain that you can change all of your advertising immediately.

Chapter 3: Certificate of Acceptance (Repair Waiver)

Overview

Ecology encourages motorists to repair their vehicles if at all possible. Often the problem that causes an emission failure also shortens engine life, lowers mileage, and harms drivability. However, automotive repairs may be too costly for some citizens. That's why Emission Check has a waiver program, officially called a "certificate of acceptance." The Legislature established the waiver to set limits on what people in hardship cases must spend to try to fix the cause of an Emission Check failure.

A waiver means that someone has made a "good faith" effort to bring emissions from his or her car within standards. The waiver requirements described in this chapter define what that effort must be.

Less than two percent of all the vehicles in the Emission Check Program get waived. That's a small percentage, but works out to about 20,000 cars and trucks each year. The waiver program attracts customers to certified shops:

- People naturally fear repair bills. They see the waiver process as a way to control those costs, if necessary.
- Only appropriate diagnosis and repairs done by an authorized specialist at an Emission Check shop qualifies for a waiver. People come to your shop for that reason.

There's nothing that restricts people from working on their own cars or using a non-authorized shop. If they pass a retest, fine. But if they don't, the money spent won't count toward a waiver.

So much time is spent on the waiver issue that it's easy to overlook how smoothly most people pass through the Emission Check Program. Only 16% fail the first test. That means most motorists (about 850,000 each year) don't even need repairs; they just make one trip to the test station. Of the vehicles that do fail, over 60% pass their second test.

Rules and Policies

If a vehicle fails an Emission Check, there are two ways to complete the process:

- **Pass a retest.** Usually the vehicle needs repairs to do this.
- **Obtain a waiver.** The details are below.

Also, the vehicle can be sold or conveyed to a licensed automobile recycler.

All of these conditions must be met to obtain a waiver:

- Vehicle fails an Emission Check.
  - A waiver applies only to appropriate repairs or diagnosis made after the initial failure at the Emission Check station.
  - **Work done before the initial test does not count toward a waiver.** Customers should be made aware of this if they come in for service within six months of when they need an emission check.

- *Gasoline only:* Vehicle is outside warranty coverage.
  - **Starting with 1995 models,** the emission warranty is two years / 24,000 miles (whichever comes first) and major emission control components, such as the computer and catalytic converter, are covered for eight years / 80,000 miles (whichever comes first).
  - **Most warranties** only cover normal use and wear. Some damaged parts may not be covered under warranty even within two years / 24,000 miles or eight years / 80,000 miles. Always check warranty documents and to be sure. (Emission Check stations carry details on this subject. If you would like something to give to your customers, contact Ecology.)
  - **Your job:** Make sure the job is outside warranty coverage. If your customer is entitled to warranty repairs, refer him or her to an authorized warranty repair facility. Customers may be entitled to free repairs under recall programs.
- **Vehicle has all its emission controls.** The original emission controls, or their EPA approved replacements, must be:
  - **Installed.** If a component is missing, the waiver will be denied.
  - **Operational.** Components must be in working condition with all belts, hoses, wires or other connections in place.

The waiver applies only to diagnosis and performed repairs on intact, properly configured engines and emission control systems. There is no Emission Check waiver cost limit to the customer to restore a vehicle to its legal configuration. Privately imported "gray market" vehicles are a special situation. Certain performance modifications are allowed.

- Only *appropriate repairs and diagnosis* count toward a waiver. An "appropriate repair" is when you:
  - **Diagnose** the cause or cause(s) of an emission test failure; and / or
  - **The Repair** of one or more of these causes.
  - **An appropriate repair should reduce** at least one emission test reading or diagnose and / or repair an emission problem identified by the on-board diagnostic (OBD) system.
  - **Contact** Ecology for guidance if you face a situation where these conditions can't be met.

If your customer insists on inappropriate repairs and wants to claim them toward a waiver, you may refuse the job or have the customer sign a disclaimer statement on the invoice.

- **Only an Ecology Authorized Emission Specialist at the Emission Check shop where he or she is registered may perform waiver work.**
- **Required paperwork:**
  - **Use** an invoice / receipt form that is pre-numbered and pre-printed with the name and address of your business.
  - **Itemize** all appropriate repairs and / or diagnosis performed.
  - *For gasoline vehicles:* **Record** the vehicle's emission readings and / or repair of problem(s) identified by the on-board diagnostic (OBD) after appropriate Emission Check repairs.

- **Describe** the vehicle, including license number, vehicle identification number, and odometer reading on the invoice / receipt.
- **List** the customer's name, address, and phone number on the invoice / receipt.
- **List** any missing or inoperative emission control components.
- **List** any further appropriate emission repairs you recommend.
- **The AES must sign** and clearly write his or her AES number on the receipt.
- **Give** the customer the original copy of the invoice / receipt.

■ **The specialist** who does the work must fill out the repair information section on the bottom of the customer's Vehicle Emission Test Report.

- The specialist must neatly write his or her name, AES number, the date and time, and must sign the form.
- Return the form to the customer.
- It is the ***customer's responsibility*** **to bring the form** to the repair shop. Without it filled out as described, he or she can't get a waiver.

■ The cost of diagnosis and *appropriate repairs* must reach:

- $100 for 1980 and older vehicles
- $150 for 1981 and newer vehicles.

■ **Vehicle fails a re-test at the Emission Check station.** (If it passes, the customer gets a passing test report and the process is over.)

- To apply for a waiver, the customer must provide the signed receipt and the signed test form.
- Test station staff will then visually inspect the vehicle for missing or inoperative emission control components.

■ Vehicle passes a visual inspection at the Emission Check station.

- If the vehicle is missing emission control components or has any that are disconnected or not operational, the waiver is denied. The engine must be restored to its proper configuration and there is no limit on that cost.

Understanding the waiver program

Customer viewpoints

Occasionally there are customers who don't fully understand the goals and purpose of the Emission Check Program. They view the waiver program as a kind of tax and want to write up an estimate that gets them across the $100 or $150 line and out of the system, estimates do not count toward a waiver.

That, of course, is not the idea. Emission Check is about repairing cars with problems. You may be able to advise a customer like that how his or her vehicle and pocketbook benefit from appropriate maintenance and repair.

According to the American Automobile Association's 2002 edition of ***Your Driving Costs***, basic maintenance costs $410 per year for a passenger car driven 10,000 miles per year. Maintenance is not a penalty. It is part of the responsibility of owning a car. Emission Check finds car problems before they become more apparent and possibly more damaging and expensive.

Shops' viewpoints

A few shops and specialists view Emission Check service orders as a ticket to a quick $100 or $150. This attitude is very disappointing to Ecology and the majority of the auto repair trade. The Emission Check repair program must represent the highest standards in value and service to the customer. Emission Check repairs should mean accurate diagnosis and appropriate repairs.

Different shops have different capabilities. Some shops are set up for full-service diagnosis and repair and can operate at very sophisticated levels. Some shops target customers seeking prompt, inexpensive, and *routine* maintenance services. Ecology has never attempted to draw a line based on shop capabilities. There are too many factors involved. But a few shops damage everyone's reputation by attempting repairs they are not qualified to perform. Fortunately, there are many examples of shops that are honest with themselves and their customers. When they can't tackle a job, they say so and often provide a referral. That's the right way to handle it.

Questionable invoice / receipt

If an invoice / receipt do not clearly show appropriate repairs and / or diagnosis it is incomplete. Emission Check station staff will refer it to Ecology. Ecology field staff will review the matter by gathering information about the situation. This information will be used to determine whether Emission Check rules or policies were violated and whether the shop or specialist needs guidance or additional training in making appropriate repairs and / or diagnosis.

The review can include such things as:

- Going over the invoice / receipt;
- Contacting the specialist;
- Contacting shop owner or management;
- Contacting the customer;
- Inspecting the vehicle.

Depending on the findings, Ecology may:

- Approve the waiver; or
- Deny the waiver and take corrective action.

Corrective action. This may include:

- **Directing** that appropriate diagnosis and repairs be performed. Ecology will explain which repairs were not appropriate and why.
- **Providing** technical guidance to the specialist or shop.

- **Temporarily suspending** a shop or specialist. This usually occurs in cases where Emission Check rules and policies are ignored or disregarded, or where a shop or specialist repeatedly performs questionable repairs.
- **Permanently removing** a shop or specialist. This occurs in cases of severe, willful, and repeated violations of Emission Check rules and policies.

To avoid potential corrective action against you, decline customer requests to apply inappropriate repairs toward a waiver. If the customer insists, you may wish to ask him or her to sign a disclaimer statement, to help make the point about appropriate repairs.

Fraudulent waivers

There is a fine of up to $250 for falsely obtaining or trying to obtain a waiver.

- This applies to anyone: specialist, shop manager, vehicle owners.
  - It also applies to anyone who helps someone else to get a waiver falsely.
- The regulations (173-422-145 WAC) prohibit:
  - The use of invoice / receipts or other documents containing false information; or
  - Any other fraudulent means to get a waiver.
- Anyone fined by Ecology has the right to appeal the penalty to the Washington State Pollution Hearings Board.

Obtaining or attempting to obtain a certificate of acceptance through the use of receipts or other documentation containing false information is a violation of the law and is subject to monetary penalties.

Chapter 4: Tampering

Overview

Tampering is any change to the design of a vehicle. This includes the removal or disabling of an emission control device or system, or making adjustments outside the manufacturer's specifications. Tampering also includes replacing the engine with one from another vehicle manufacturer or one other than an original configuration. Tampering is a violation of both state and federal laws.

Tampering laws apply:

- **In all places,** not just Emission Check areas.
- **To all persons,** not just Emission Check authorized specialists.

No person in any part of the United States may alter, remove, or disable an emission control component on a motor vehicle licensed for use on a public highway.

In Washington's Emission Check Program, a tampered vehicle cannot receive a waiver. When a motorist applies for a waiver, the Emission Check station staff inspects the vehicle for missing or inoperative emission control components. When doing Emission Check repairs, the Authorized Emission Specialist must list on the invoice / receipt any missing or inoperative emissions control components. Please explain to the consumer that the vehicle cannot qualify for a waiver without all of its emission controls in place and operational.

Customers need to understand the importance of having the emission devices in place and operating at manufacturer's specifications so that the vehicle will perform as originally intended.

Forms of tampering

A vehicle with emission devices missing, modified, or disconnected is considered tampered.

1. Missing

If a device is required and it has been removed, then it is considered missing (tampered).

Example: Your manual or under-hood label states that an air injection system is required. If you observe that the air pump is not there, you would then identify the vehicle as being tampered.

2. Modified

If a device is required, but has been:

- physically or functionally altered or changed; *or*
- replaced with a non-original part identified by the manufacturer as not legal for use on pollution controlled vehicles; *or*
- replaced with a part designed for a different application than currently used; …..it is considered modified (tampered).

Example: If a vehicle stock application came with a two-barrel carburetor and now has a four-barrel carburetor that was not available from the factory, you would then identify the vehicle as being tampered.

Engine switching: Contact Ecology before changing an engine. A replacement engine must meet the following requirements:

> "The primary emissions control components" means the components of the vehicle installed by the manufacturer for the purpose of reducing emissions or its replacement or modification which is acceptable to the United States Environmental Protection Agency." *(173-422-020 WAC)*

Special note on imported engines: There are a number of imported engines available, especially from Japan that were made for use in the country they came from, but not in the U.S. They do not meet EPA requirements for U.S. vehicles and are illegal to install. Often the intake and exhaust systems on these engines are not compatible with U.S. vehicles. (Even if an imported car is the same make as the engine, the car is especially engineered for the U.S.) On many of these engines the proper intake and exhaust manifolds cannot even be installed. Often parts for these engines are not available in the U.S. Be very careful before you buy a low cost imported engine for yourself or a customer. If you have questions, please contact Ecology.

3. Disconnected

If a device is required and is present, but missing a hose, wire, or belt needed to put it into operation, it is then considered disconnected (tampered).

Example: If a vehicle is required to have an air injection system and the device is present but missing the fan belt, you would then identify the vehicle as being tampered.

What to do:

- Identify the defective emission control components on the work order.
- Inform the customer of the condition of the emission control components. The customer must decide if he or she wants to replace or repair tampered components or address the emission failure knowing the vehicle will not qualify for a waiver (certificate of acceptance).

Tampering and waivers: the bottom line

The cost of restoring tampered emission control devices may be counted toward the waiver as long as all of the devices are in place, in proper configuration, and operational at the time the vehicle is inspected for the waiver. The vehicle must be restored to its proper configuration, regardless of the total cost.

Example: A vehicle is identified as being tampered. It is missing a Thermostatic Air Cleaner (TAC) unit and a Catalytic Converter (CAT). All of the other required devices are in place and operational. Itemized replacement costs are as follows: $300 for the CAT replacement and $75 for the TAC replacement, both including labor. The consumer must replace or repair both items to be eligible for the waiver. The $375 spent counts toward the waiver amount.

If you have any specific questions regarding tampering or engine changes, contact Ecology. Remember: The vehicle **must** have all of its emission control devices intact and operational before it qualifies for a waiver.

Special cases: gray market, performance modifications

Gray market vehicles are made in another country for use in that country, but are brought privately to the United States. For instance, someone visits Germany, buys a sports car there and has it shipped home to the U.S. A gray market vehicle does not have U.S. required emission controls. It is not considered tampered. A gray market vehicle that fails an Emission Check must proceed through the waiver process. It does not need to be retro-fitted to U.S. standards to replace "missing" emission controls. When in doubt, contact Ecology, especially if you're not sure a car is indeed "gray market."

Performance parts (usually aftermarket) can be installed and not considered as tampering if done properly and with approved parts. The parts must be approved by the EPA or the California Air Resource Board (CARB) and no emission control components may be removed or made inoperative. The Specialty Equipment Marketing Association (SEMA) labels parts with a "green diamond" to identify parts that are acceptable for use on an emission controlled vehicle. Look for the green diamond marked parts and the EPA or CARB approval. Contact Ecology when in doubt.

Chapter 5: Repair Shop Equipment Standards and Procedures

This chapter describes Ecology's requirements for emission testing equipment, tailpipe emission standards, and some basic emission testing procedures.

Gasoline equipment, emission standards, and procedures

Gasoline exhaust analyzer

Each Emission Check authorized gasoline repair shop must have an approved emission analyzer, calibration gas, and associated valves, gauges, and adapters.

An approved analyzer is a BAR 84 or newer device that measures hydrocarbons (HC), and carbon monoxide (CO). (Many analyzers also measure carbon dioxide (CO_2) and oxygen (O_2.) It must meet these accuracy standards:

- CO: $\pm$ 0.2 percent
- HC: $\pm$ 30 ppm
- CO_2: $\pm$ .5 percent

The analyzer must be capable of passing a leak test by vacuum draw down or by port / probe comparison. If a leak check is listed in the menu, it must be used.

Calibration gas is a mixture of propane (which is a type of HC), CO, CO_2 and an inert gas. Many tool and equipment suppliers carry gas, cylinders, gauges, and adapters.

The calibration gas must meet BAR 84 or BAR 90 low-to-mid range requirements. Bottle (cylinder) pressure must be at least 25 pounds per square inch (psi) at any time. Gauges must indicate both bottle pressure and line pressure. Pressure gauges must be appropriate for the size and type of cylinder used. Also needed: an adapter to connect the analyzer probe to the gauge set, and a probe cap or vacuum adapter for leak tests.

Accuracy tests: Accuracy Analyzer Reports must be completed monthly. Ecology provides certified shops with log books containing forms and instructions for these tests. The log book must stay with the analyzer(s) or on the premises.

OBDII scanner needed at the repair shops: The OBDII scanners must be capable of duplicating the OBDII test failures. There are four areas:

- Retrieve the Status of Non-Continuous monitors for readiness.
- Diagnostic Trouble Codes (DTC) present.
- The MIL light (check engine) commands.
- Retrieve Generic OBDII (DTC) codes that are set and have commanded the MIL to illuminate.

Gasoline emission standards

Washington's emission standards are limits intended only to identify **grossly polluting vehicles.** Never adjust a vehicle to these standards. Always use the **manufacturer's specifications** when repairing or adjusting a vehicle. Use the emission standards only as a guide to assist you with repairs and / or recommendations.

Washington's gasoline engine emission standards are:

Two Speed Idle Test Exhaust Emission Standards

Model Year	HC	CO	CO_2*
1980 and older	600 ppm	3.0%	6.0%
1981 and newer (-8500 GVWR)	220 ppm	1.2%	6.0%
1981 and newer (+ 8500 GVWR)	400 ppm	3.0%	6.0%

When tested using the acceleration simulation mode (ASM) procedure specified in 173-422-070 WAC, the following standards must be met during that mode, and the applicable standards from 173-422-060(1) WAC during the idle mode.

ASM Mode Exhaust Emission Standards

Model Year Test Weight (lbs.)	CO%*	HC (ppm)
1980 and earlier model year cars and trucks (0-8500 lbs.)		
1750	4.2	400
1875	4.0	380
2000	3.8	350
2125	3.6	340
2250	3.4	320
2375	3.2	300
2500	3.0	290
2625	2.9	270
2750	2.8	260
2875	2.7	250
3000	2.6	240
3125	2.5	230
3250	2.4	220
3375	2.3	220
3500	2.1	200
3625	2.1	200
cars 3750 & greater	2.1	200
trucks 3750 & greater	2.5	300

1981 and later model year cars and trucks (0-8500 lbs.)

1750	1.8	250
1875	1.7	240
2000	1.6	220
2125	1.5	210
2250	1.5	200
2375	1.4	190
2500	1.3	180
2625	1.3	180
2750	1.2	170
2875	1.2	160
3000	1.1	160
3125	1.1	150
3250	1.0	150
3375	1.0	150
3500	1.0	150
3625	1.0	150
cars 3750 & greater	1.0	150
trucks 3750 & greater	1.5	200

*Carbon monoxide (CO) and hydrocarbons (HC), measured as a percentage (%) or parts per million (ppm) of the exhaust volume.

***The CO reading added to the CO_2 reading must be equal to or greater than 6.0%** or the test is not valid unless HCs are greater than 1800 ppm. If the sum of the two readings is less than 6.0%, the vehicle fails. (Usually this occurs when there is a leak in the exhaust system which draws in fresh air and dilutes the emission, giving a false reading.)

The engine must idle below 1100 rpm or the test is not valid. Vehicles that idle faster than 1100 rpm cannot be tested at Emission Check stations.

Optimum readings: Properly adjusted to manufacturer specifications, most vehicles' emission readings should be less than 100 ppm HC and 0.5% CO (catalytic converter equipped).

OBDII System: Standardized on-board diagnostic (OBD) systems (also known as OBDII) were required by Environmental Protection Agency starting with 1996 model gasoline vehicle cars and light trucks. If a 1996 or newer model vehicle is equipped with an Environmental Protection Agency certified on-board diagnostic (OBD) system, the information stored in the on-board computer must indicate that all emission related functional checks have been completed. This does not include 1996 to 2000 model year vehicles that can have up to two readiness monitors not set to ready, or 2001 or newer model year vehicles that have one readiness monitor not set to ready, and no malfunctions detected that would command the malfunction indicator light to be illuminated. (For additional information regarding the OBDII testing, refer to *Chapter 10.)*

What are the model year custom cars and homebuilt cars? These types of specialty vehicles are tested according to the year they are registered. In other words: go by registered model year, not engine year. For example: A vehicle registered as a 1993 vehicle must meet 1993 emission standards, no matter what year the engine is. If, after repairs or adjustments are attempted, the vehicle still does not meet the emission standards for its registered year, contact Ecology.

Gray market vehicles must meet emission standards for their model year.

Gasoline Emissions Tail Pipe Test procedures:

1. Before each test, ZERO and SPAN; or perform an electronic calibration.
2. Make sure the analyzer has been warmed up at least 30 minutes or the manufacturer's specified time. This is an ideal time to warm up the vehicle to be tested.
3. Check the vehicle for all applicable emission control components.
4. Close the hood.
5. Check the vehicle exhaust system for leaks.
6. Make sure the engine and catalytic converter are at normal operating temperature and all accessories are turned off.
7. If you are repairing a vehicle that failed an ASM test, load the vehicle by following the Replicated Load Cruise Dynamometer Test procedure. Do not exceed the time cycle (limit) that the vehicle is tested at the test station. (Test for 30 seconds and if failing, not to exceed 180 seconds.)

There are special emission testing procedures for certain makes and models. Check your service manuals and bulletins.

If a vehicle fails at the Emission Check station, there is a reason. A full discussion of emission diagnosis and repair is beyond the scope of this chapter and handbook.

The guiding principle is to re-create the conditions under which the vehicle failed. You should ask the customer questions, and simulate them on the dynamometer or the testing method used at the Emission Check station. This chapter also lists common causes of failures. In the end, your most valuable tools are your knowledge and experience.

If you have any questions about a part, procedure, or problem, contact Ecology.

Diesel equipment, emission standards and procedures

Diesel opacity meters

Emission Check authorized diesel repair shops do not need an opacity meter to check repairs. (But authorized fleet and heavy-duty self-test facilities *must* have Ecology approved testing equipment.) If you "eyeball" emissions, base your readings on an opacity chart or similar guide.

To meet Ecology's approval (173-422-095 WAC), an opacity meter must:

- Automatically self-calibrate before each test; and
- Provide for continuous measurement of exhaust opacity, unaffected by rain or wind.

Ecology also recommends these features:

- Accuracy of plus or minus one opacity percent digit.
- Reading linearity of one percent opacity digit from 0 – 100% opacity.
- Drift of less than plus or minus one percent per use.
- Response time of less than 0.140 seconds for a change from 0-95% of full scale.
- Operating temperature range of 32°F – 120°F.

Several makes and models meet these requirements and recommendations. Contact Ecology for more information before purchasing an opacity meter.

Diesel emission standards

Washington's emission standards are maximum limits intended only to identify **grossly polluting vehicles.** Never set a vehicle to these standards. Always use the **manufacturer's specifications** when repairing or adjusting a vehicle. Use the emission standards only as a guide to assist you with repairs and / or recommendations.

Washington's diesel engine standards are:

Model year	Opacity limit
91 and earlier	55%
92 and later	40%
Light Duty Diesel Dynamometer (LDD)	20%

Diesel procedures

1. Check the vehicle for all applicable emission control components
2. Close the hood
3. Check the vehicle exhaust system for leaks.
4. Make sure the engine is at normal operating temperature and all accessories are turned off.
5. Test, using the proper snap-idle opacity meter procedures.

Snap-idle procedure:

- **Check for and follow any engine manufacturer restrictions on engine speed.**
- With the engine at normal operating temperature and the transmission in neutral, move the accelerator pedal from normal idle to full power as quickly as possible. When the engine reaches full governed rpm, immediately release the accelerator pedal.

- Fully release the accelerator pedal so that the engine decelerates to normal idle.
- If you use an opacity meter, it must meet the requirement of 173-422-095 WAC. Measure the smoke opacity continuously during the test.

Repeat the above steps no more than ten times. A passing test occurs when three maximum opacity measurements in a row meet the standard.

Standards for vehicle under 8501 using the ASM dynamometer test.

All model years = 20%

ASM dynamometer test procedure:

- Follow steps 1 – 4 from the snap idle procedure in this handbook.
- Raise drive wheels of vehicle off ground.
- Automatic transmission - use drive not overdrive. Manual transmission - use second gear.
- Manual use 2nd gear, accelerate vehicle to twenty five miles per hour (if 2500 RPMs are exceeded, select the next higher gear).
- Apply brake pressure to duplicate load while maintaining speed at 25 MPH for no more than 5–15 seconds. Read or view emissions readings.
- Emission Check repair shops are not required to have Gas Cap testing equipment.

OBDII Test Procedure:

- **Read the Emission check form from the test station first. Become familiar with the failure at the test station before testing the vehicle in your facility. Duplicate the test as it was performed in the test station.**
  - Inspect the Check Engine Light (MIL) to see if it briefly or continuously comes on while the key is in the on position without the engine running (KOEO).
    a. NO – Fail KOEO, continue with test
    b. Yes – Pass KOEO, continue with test
  - Start the vehicle and inspect to see if the Check Engine Light (MIL) comes on while the key is in the on position with the engine running (KOER). A yes or no will not cause a failure it only indicates a problem may or may not exist.
  - Shut the vehicle off, remove the key from the ignition, and then proceed to plug the adapter into the Data Link Connector (DLC) of the vehicle. If the DLC is missing or damaged making it inaccessible, or modified, the vehicle will fail the OBDII test. Once the adapter has been plugged into the DLC of the vehicle, initiate the communication part of the OBDII test.
  - If no communication is established during the test, the vehicle fails.
  - Check for any DTC(s) set that commanded the MIL to illuminate, note them at this time. If any are present, the vehicle fails.

- If no DTC(s) are present that have commanded the MIL to illuminate, check the status of the readiness monitors.
- If the vehicle is not ready due to many readiness monitors set to not ready, the vehicle is not ready. The vehicle may need to complete various drive cycles to become ready.
- If enough readiness monitors are set to ready and no other part of the OBDII test failed, the vehicle is ready.

If a vehicle fails at the Emission Check station, there is a reason. A full discussion on OBDII emission diagnosis and repair is beyond the scope of this chapter and handbook. *Chapter 10* provides several tips and ideas on identifying and correcting the cause or causes of an OBDII failure.

If you have any questions about Repair Shop Equipment, Standards and Procedures, contact Ecology.

Chapter 6: Test Station Equipment and Calibration

The "Ping-Pong Effect"

The two most common customer complaints in the Emission Check Program are:

1. "My vehicle passes at the shop but fails at the test station!"
2. "My vehicle shouldn't have failed. Those test stations use poor equipment and bad test methods. I don't believe the test was accurate!"

The customer may feel he or she is bounced back and forth, commonly known as "the ping-pong effect" between the shop and the test station or even between test stations. Customers and technicians may feel tempted to blame the test stations. This chapter reflects the Quality Assurance (QA) requirements used at the test stations so you and your customer can rely on an accurate, fair, and consistent emission testing.

Quality Assurance (QA) Definition

Quality Assurance (QA) is defined as a system for integrating the quality planning, quality assessment, and quality improvement efforts of various groups in the organization.

In pollution measurement, quality assurance is concerned with all activities affecting the quality of measurements, as well as the establishment of methods and techniques to enforce compliance with requirements.

The ultimate objective of the I/M quality assurance program is to assure that accurate and complete inspections are being performed and repairs are effective in reducing emissions.

A key component to the Washington centralized emission program is the experience and well trained maintenance team of the contractor. The current contractor is Agbar Technologies, Inc. Their technicians are provided with tools and resources needed to perform preventive and corrective maintenance, including calibrations of equipment and systems.

Emissions tests you can count on

Emission Check stations must follow equipment, test procedures and calibration, and repair requirements that are more exacting than what is required for certified repair shops. For more details, see 173-422-070, 173-422-075, 173-422-090, 173-422-095, 173-422-100, and 173-422-120 WAC.

Emission Check stations are built, owned, and operated by Agbar Technologies, Inc., a nationwide firm specializing in vehicle emissions inspections under a competitive bid state contract. All test station employee's work for Agbar Technologies, Inc., not for the State of Washington.

Equipment and quality assurance checks at the test stations make the Emission Check Program inspections the "gold standard" in Washington for very accurate tailpipe, gas cap, and OBDII testing. Remember; the customer demands accuracy and we are dedicated to deliver that accuracy.

Chapter 6: Test Station Equipment and Calibration

Analyzers

The test station analyzers are equal to or exceed the BAR 90 standard. The analyzers were developed by STI (SysTech International) for the Washington "Emission Check Program."

The BAR 90 test method was developed by the State of California Bureau of Automotive Repair, and is approved and required for Ecology's use by the EPA.

These analyzers are especially designed for higher-volume use, compared to the models used in repair shops. There are quality assurance measures taken before and after every test, as well as hourly, daily, weekly, and monthly.

Between each inspection, the entire system is purged with filtered dry air to remove all traces of exhaust gases. This is to ensure that no emission remnants affect the next vehicle's test. An automatic auto zero, purge and HC hang up also occurs between each test.

Each morning, calibration gas is run through all the analyzers. Calibration gas contains precise percentages of hydrocarbons, carbon monoxide, and carbon dioxide. The analyzers must detect the known concentrations of the calibration gas mix. If an analyzer fails this automatic calibration, it is shut down.

The entire system is inspected daily for leaks, and a "leak check" is performed. Each week a more comprehensive calibration gas test is used. This time the procedure is a 4 point calibration each time using a different calibration gas mix. At least once a month, Ecology field inspectors perform a full quality assurance inspection of all analyzers at the station.

Dynamometers

The loaded ASM tests are performed on steady state dynamometers produced by Mustang Corporation. They are tested monthly for speed and load accuracy. The station contractor's maintenance team submits calibration reports to Ecology each month. All discrepancies and corrective actions must be explained.

To ensure objectivity, the vehicle inspection is blind. In other words, the lane operator cannot influence the computer automated procedure. He or she has no information on the progress of the inspection until the test results are printed out. The test is administered by a sophisticated computer system that contains information on all makes and models of motor vehicle. The computer draws on this data to properly set up the inspection for each individual vehicle. This data is known as a VLT, "Vehicle Lookup Table." This VLT is very important to ASM testing because it designates the proper load applied for the wide range of vehicles automatically.

Gas Cap Tester

Shall include a gas cap testing system meeting the following specifications.

1. Shall test the leak rate of gas caps to prevent evaporative emissions.
2. Shall be designed so that tethered caps can be accommodated (thus the connector length shall be long enough to reach either side of the vehicle) and shall be capable of pressurizing the gas cap for this test. The pressurizing system shall apply a controlled pressure of 30 inches H_2O to the gas cap. The system shall indicate fail if the leak rate is greater than 60cc per minute. The system shall indicate a pass if the leak down rate is 60cc or less per minute. The leak test shall not last longer than 20 seconds.
3. The system shall have the capability to change the leak rate pass / fail set-point if needed at a later date.
4. The system shall be tamper resistant.

5. Gas cap test equipment shall indicate a pass / fail condition.
6. The system shall have an indicator and / or initiate a screen prompt on position one informing the Lane Operator when the system is ready to test (pressurized and power turned on).
7. The system shall have a means of controlling the maximum reservoir pressure and relieving overpressure. The system to be provided has its pressure set to 5 PSI and the relief value at 50 inches of water.
8. The system shall be equipped with a serial data port and shall transmit pass / fail and calibration information to the WA 2002 database via the data link.

On-Board Diagnosis (OBD)

The WA2002 must be equipped with a standard SAEJ1978 OBDII connector and communications link to allow an RPM signal, readiness codes, fault codes, and Malfunction Indicator Light (MIL) status to be downloaded from the on-board computer for applicable vehicles.

The equipment design and operation must meet all Federal requirements (contained in 40 CFR 85.2207-2231) and recommended SAE practices (J1962, J1978 and J1979) for OBDII system inspections.

Diesel

Emission Check stations use Red Mountain, Inc. hand-held diesel opacity meters. As with all Ecology approved opacity testers, the units self calibrate before each test. In addition, the lane operator checks the zero and span before testing. The meters are cleaned daily. In the meantime, if too much soot accumulates on the sensing device, the meters will not function. Instead, they prompt the operator to clean the unit before testing.

Ecology field inspectors perform a quality assurance inspection monthly. Ecology inspectors use light filters that have a precise set opacity level to test the opacity meters.

The inspection is blind because the inspector cannot see the results of each snap idle sequence until the entire test is completed. The computer automated procedure allows no more than 10 snap idle sequences.

Chapter 7: Vehicle Change of Registration

All buyers of used vehicles need to know this!

You can do a big favor for customers who are buying or have just bought a used vehicle by telling them this:

If you live in an Emission Check area and you've acquired a used car from a private party or an out-of-state dealer and the vehicle is 5 years old or less than 25 years old, you need to have a valid *Vehicle Emission Test Report* when you change the registration over to your name.

Many people misunderstand this requirement. This chapter explains what people should do if they live in an Emission Check Program area and are buying a used vehicle.

What does "valid Vehicle Emission Test Report" mean?

- The printout in the "Final Results" box in the upper left corner says **"Passed"** or **"Certificate of Acceptance"** (a waiver). If the box says **"Failed"** the form must have a signed Department of Ecology Certificate of Acceptance hand stamp.
- The printout in the "Inspection Station Information" box right below gives a date and time the test was taken. A test report remains valid for one year from the date it was issued. This means the seller of a used car can pass the report along to the buyer within one year of that date and no new inspection is needed.

If there's no valid test report, a new Emission Check is needed.

Which changes of ownership are exempt?

- The used vehicle is bought from a Washington licensed automobile dealer *(details below).*
- The person buying the used vehicle does not live in an Emission Check area **and** the vehicle will not be garaged and operated in an Emission Check area.
- The vehicle is being transferred to an immediate family member *(details below).*
- The vehicle does not need to be licensed; it is being sold as scrap to a scrap dealer.
- The vehicle registration is being transferred from the registered owner to the legal owner.
- A public agency is acquiring the vehicle.

What if the vehicle is bought from a dealer?

- State law requires Washington dealers in counties with Emission Check areas selling a used vehicle not covered under a new vehicle warranty to include a notice in the purchase order that says, ***"The owner of a vehicle may be required to spend up to (a dollar amount established under RCW 70.120.070)"*** for repairs if the vehicle does not meet the vehicle emission standards under this chapter. Unless expressly warranted by the motor vehicle dealer, the dealer is not warranting that this vehicle will pass any emission tests required by federal or state law.
- According to state law, the buyer's signature on the notice is "a valid disclaimer of any implied warranty by the dealer as to a vehicle's compliance with any emission standards." In other words, **the buyer accepts the vehicle AS IS** and the dealer is not responsible if the vehicle fails the next regular Emission Check.

What if a vehicle is transferred between family members?

- No valid Vehicle Emission Test Report is needed if the change of ownership is between parents, siblings, grandparents, grandchildren, spouse, or present co-owners.
- A vehicle's title may be transferred between family members without an emissions test.

Before you buy, BEWARE !

The bottom line is **BUYER BEWARE !** Educate your customers to never buy any used vehicle until they know it is reasonably safe and mechanically sound. ***Before* the deal closes and money changes hands, the buyer should have the vehicle inspected by a qualified technician.**

If the buyer will need a valid Vehicle Emission Test Report, he or she should make sure the vehicle has one before closing the deal and paying the seller. The parties can decide between themselves who should get the Emission Check, but the buyer should make sure it's done **before** the sale is complete. ***(Washington has no mandatory cooling-off period. All sales are final.)*** If the vehicle fails, the buyer may demand the seller make the needed repairs, so the vehicle passes, walk away from the deal, or negotiate a lower price.

For sellers, a good selling point is a valid emission test report.

Licensing tip: The Department of Licensing requires the transfer of registration within 15 days of purchase. Too often, used vehicle buyers find themselves facing emission repair expenses that could easily have been avoided. If you know customers who are in the market for a used car, pass this information along. Tell them to know **before** they pay money to the seller whether the vehicle complies with Emission Check.

Chapter 8: "Dear Customer…"

Each year, about 160,000 vehicles statewide fail an Emission Check and their owners become repair customers. To most of these people the repair process and waiver requirements are new. The prospect of potentially expensive repair work causes anxiety for many of them.

Over the years, Ecology's Emission Check Staff has found that customers benefit from certain tips and advice. Ecology provides much of this information in the literature a motorist receives on failing an inspection. This helps many people, but many more can benefit from having this advice repeated and emphasized. This chapter talks about the things we would tell each Emission Check customer if we had the chance. Many shops already offer this advice.

Test station tips

This advice is especially important after repairs and before the customer returns to the Emission Check station for a re-test:

Your car needs to be at its proper operating temperature. Give it a warm up drive, go when lines are short, and keep it running if there *is* a line. Proper operating temperature means more than what the dashboard temperature gauge indicates. This gauge tells you about your engine's cooling system, but not about the temperature of your catalytic converter. If your catalytic converter isn't warm enough, it can't control emissions as designed. Follow these tips to get the most from your catalytic converter:

- **Warm-up drive:** Take a ten-minute drive at expressway speed on the highway or freeway. If there's an Emission Check station quite close by, use the next nearest one to make sure your car is warmed up.
- **Aim for short lines:** Avoid the end and the beginning of the month. Lines tend to be shortest mid-month, and often times midday between 2 p.m. and 4 p.m.
  - **Plan ahead:** Your Department of Licensing reminder card arrives 45 to 60 days before your tabs expire. **Don't wait** until you're forced to test during a peak period. **Hint:** Vehicle Emission Test Reports are valid for one year. Give yourself an early start; beat the rush! Don't wait until the temperature is 100°, and the lines are long.
- **While in line:** Keep the engine running. Turn off all accessories. **Hint:** Your catalytic converter may cool during the wait. When you get to the head of the line, push the pedal down slightly so the engine runs a little faster. This helps warm the converter.
  - There *are* times to turn off the engine, but only when Emission Check station staff direct you to do so.
- **Test Fees:** The test fee is $15. The test stations accept checks (local only, traveler's checks $50 and under), cash (no Canadian funds), or credit cards (Visa, MC, Discover), and your first re-test is free, all additional tests are $15 each.

Test first, repair later

A motorist may want to "prep" for an inspection, but doing so may prevent him or her from taking full advantage of the waiver program.

Protect your eligibility for a waiver. Repairs made before an Emission Check don't count. Of course, you should keep your car on its recommended maintenance schedule. But if you're counting on being able to qualify for a waiver, plan ahead.

- **If you know you need emission repairs, get the test first anyway.** Then get repairs at an authorized Emission Check repair shop. If you decide later you want to apply for a waiver, you've kept that option open.
- **If your tabs expire within one year, get an Emission Check before having maintenance or repair work done.** Many common maintenance services and repairs (performed by authorized specialists) can quality for a waiver.

Varied results

Motorists find it frustrating to get significantly different results at the repair shop and the Emission Check station or at different test stations.

- **Inspections at Emission Check stations are accurate.** Remember the analyzers at the test stations can't produce HC or CO, nor do they hold previous samples. The emissions come from your customer's vehicle. Some cases require extra detective work to find the cause.
- **Vehicle preparation and conditions can vary.** Were the engine *and* catalytic converter operating at their proper temperatures? Was there a long line? Was the outside temperature different when each test was taken? If tested on a dynamometer, was the vehicle in the same gear each time? Was the hood down when the vehicle was tested in the shop? These are some of the factors that can influence Emission Check results. Direct your customer to properly warm the vehicle and avoid long test station lines.
- **Intermittent engine problems can affect emissions.** Parts can perform inconsistently as they age. A bushing may intermittently fail to seal the carburetor, a spark plug may misfire, the surface of a valve may have a fault, an electrical wire may need replacing, and a PC valve may not open and close properly. Such things may cause variations in engine performance. They may be sporadic and tricky to spot.

Common customer comments

- **"Here's $150, get me out of this system."** Some customers see the waiver limit as a "tax" they have to pay because their vehicle failed the Emission Check. In fact, something is wrong with the vehicle and it needs adjustments or repairs. Often, this costs less than the waiver amount. Explain to your customer you will try to diagnose the cause of the failure and repair it, the state requires you to make a good-faith effort to reduce emissions.
- **"My car runs fine."** The driving public is often unable to detect a malfunction of the emission control system. While some minor malfunctions can increase emissions significantly, they do not affect drivability and may go unnoticed for a long time. An Emission Check failure calls attention to these hard to detect problems before they become bigger and more expensive.

- **Customer hasn't read instructions.** Ecology makes sure every customer gets a written set of instructions. **If read,** these instructions make the repair and waiver process clear. Here's what your customer should be reading:
  - **Test report:** Every vehicle gets one, *pass* or *fail*. It has instructions on the back.
  - Repair information packet. It is given to every vehicle that fails. It lists all the authorized shops in the area and has a complete customer checklist of the diagnosis and repair and part of the waiver process.
- **"What you should know about your auto emissions warranty."**
  - **"If your car just failed an emission test, you may be entitled to free repairs."** Remember some vehicles are covered by their manufacturers for up to 2 years or 24,000 miles, whichever comes first. (Catalytic converter and computer are 8 years or 80,000, miles whichever comes first.)
  - Customer requests inappropriate work. Only diagnosis and repairs or adjustments directed at correcting the cause of the emission failure can count toward a waiver.
  - **If a customer demands** specific work that would not be waiver eligible, some shops have the customer sign a disclaimer statement. Here is an example, for the repair order before work begins:

    "I have requested repairs on my vehicle, license number _____, test report number _____ that are not necessarily aimed at correcting the emission test failure. In the event my vehicle fails a re-test at the test station, I understand that the dollar amount for these repairs may **NOT** be included in the dollar amount necessary to obtain a Certificate of Acceptance (waiver) at the test station."
  - **You have the right** to refuse to perform inappropriate work.
  - A vehicle may need some non-emission repairs. If a job includes emission and non-emission work, either use a separate invoice / receipt for each or, if using one, make it very clear which labor and parts are for emission repairs and which are not.

Used car buyers, BEWARE!

Washington is a buyer beware state. When you hand over the money for a used car, *it's yours.* The buyer needs a valid emission test report when transferring the registration to his or her name (except for used vehicles bought from Washington dealers in Emission Check counties).

Every used car buyer should:

- Make sure the used vehicle has a valid emission test report before paying the seller.
- Have a pre-purchase inspection. This includes a qualified technician checking the vehicle for safety and engine conditions before paying the seller. This applies whether you buy from a dealer or a private party. A used car check should include:
  - Comprehensive analysis of engine operation (even if it passed the emission check, there may be other problems).
  - Brake inspection.
  - Check for engine leaks, including transmission and differential(s).
  - Cooling system check for corrosion and antifreeze mixture. Heating and air conditioning systems check.

Chapter 9: Technician Tips

Your role as an Authorized Emission Specialist at an authorized shop is to lower emissions on your customer's vehicle so it will pass. This chapter offers tips on achieving that goal. (Remember, this handbook is not intended to replace Ecology-approved technical training).

The key steps are:

- **Understand** the conditions under which the vehicle failed. You may need to recreate them.
  - Be aware of makes and models with "pattern failure" problems that require special preconditioning before testing their emissions.
- **Diagnose** the problem.
- **Correct** the problem.
- **Verify** the correction.

Gasoline vehicles

Understand the conditions under which the vehicle failed

Ask questions! Whoever has contact with the customer technician, manager, or service writer should ask the customer:

- **How far was the vehicle driven before the test?** If it was driven less then 10 miles on the freeway, the vehicle may not have reached normal operating temperature when tested.
- **How long was the vehicle in line before the test?** The wait time can vary considerably and is critical to lead you toward a proper diagnosis.
- **Was the vehicle shut off while in line?** Again, this can affect whether the emission control systems were at normal operating temperature and functioning as designed.
- **What was the outside temperature when the test was taken?** The temperature can play a crucial role in proper diagnosis. Idling in line during very hot weather can lead to a test failure. On cold days, the vehicle components may cool, causing a failure.

These basic questions can help you find out if the vehicle was at proper engine or catalyst temperature when it was tested. To best understand the failure, **recreate the conditions experienced at the test station.** For vehicles being ASM tested on a dynamometer at the Emission Check station, there's a simulated loaded test you can set up and perform. Follow these recommended steps:

1. **Take tailpipe readings at various rpm ranges.** Automatic transmissions are geared so that at 25 mph with a 15 hp load, the rpm can be below 2500, sometimes as low as 1500 rpm.
2. **Recreate the pre-test drive.** Drive the vehicle the same distance and speed the customer did before visiting the test station.
   - **Recreate the pre-test wait.** Idle the vehicle for the same amount of time the customer waited.
3. **Recreate the ASM 25/25 test.** This procedure should help duplicate the ASM 25/25 dynamometer test at the Emission Check station.

- **Raise the drive wheels.** Make sure the vehicle is safely blocked.
- **Apply brake pressure** to duplicate load while maintaining speed at 25 MPH for no more than 5 – 15 seconds. Read or view emissions readings.
- **Drive the vehicle with a steady accelerator** and check the readings. If the readings remain below .5% CO and 100 ppm HC during the first 15 seconds, the vehicle should pass the loaded test at the test station. To further ensure the vehicle can pass at the station, make sure it is set to the manufacturer's specifications.

4. **For feedback / computerized vehicles,** connect a voltmeter or scan tool to the 0_2 sensor and "drive" the vehicle at 25 mph and watch to see if the fuel system is being driven rich. If so, you have identified that there is a problem somewhere in the system, not unlike diagnosing a computerized vehicle with a drivability problem without any hard fault codes.

Using these procedures to check a vehicle that has failed an emission test on the ASM 25/25 dynamometer can help you determine if:

- there is an actual problem with the vehicle, or
- the failure was related to test conditions, such as:
  - the vehicle had a long wait, or
  - was shut off in line, or
  - was not warmed up to a proper operating or catalyst temperature.
- If at all possible, use a portable analyzer to check your readings. Drive on a moderate hill.

If you need to make repairs or adjustments, use the simulated loaded test to **verify your results.**

Remember to make sure you warm up your gas analyzer before checking any vehicle, and to zero and span before each test. If there is any water in the lines or filter bowl, clean them out and / or change the filter to ensure your analyzer is reading correctly.

Recalls, pattern failures, and preconditioning

Recalls:

Auto makers and the EPA use "emission recalls" to correct emission control problems that have become apparent in a large group of vehicles. Recall repairs not only protect air quality, but they improve vehicle performance, too. Most recalls are voluntary, but some are ordered by EPA. (Other federal agencies can order recalls for safety defects.)

The recall repair is free to the owner. Recalls ordered by EPA remain in effect no matter how long ago the recall began. Voluntary recalls may have expiration dates and may be issued on service bulletins, rather than special recall notices. It is up to the owner to contact the dealer and make an appointment for recall work. Manufacturers mail recall notices to all known owners of their vehicles. However, it is nearly impossible for auto makers to keep track of used vehicle owners. This problem limits the effectiveness of recall campaigns.

If your shop has information on recall bulletins, you can help your customers learn if they are entitled to free recall repairs. You or your customer can contact a nearby dealer with the vehicle identification number (VIN) to learn if it has been included in any recall.

Pattern failures:

Pattern failures occur when a large number of vehicles with the same engine and / or emission control devices fail an emission test. Many pattern failures can be avoided by preconditioning specific vehicles before taking exhaust readings. There are several reasons why pattern failures may occur:

- **Cold start results:** Most vehicles are designed to operate in an enriched mode during warm up operation. This rich mixture could cause the vehicle to fail the test if it is not fully warmed up. Be sure that the vehicle is at operating temperature before testing its exhaust in your shop. Tell your customer to have the vehicle up to operating temperature during its test at the Emission Check station.
- **Computer feedback controls:** Vehicles with feedback controls must meet certain conditions in order to operate in "closed loop" mode. In closed-loop, the computer utilizes input from sensors to control actuators and therefore controls fuel metering, ignition, and emission control systems. When the computer does not respond to oxygen sensor input, it is in "open loop" operation. Some of the conditions that must be met in order for the computer to operate in closed loop are:
  - **The engine** must reach and remain at operating temperature (190° or above).
  - **The O_2 sensor** must reach approximately 550° F and send varying voltage signals to the computer.
  - **The computers** internal timer parameters must be satisfied.
  - **All other** sensor requirements must be met.
- **Evaporative canister:** Many feedback systems purge the evaporative canister during the first off idle mode of operation after the vehicle is at operating temperature. If this occurs during your test or at the test station, it could affect the CO results.
- **Catalytic converter:** The catalytic converter will not function unless it is at the proper temperature of approximately 450° F. If the engine idles for an extended period of time or is turned off, the catalytic converter could cool down and not function as designed by the manufacturer.

Preconditioning

Proper preconditioning of the vehicle can help prevent pattern failures and should ensure that the catalytic converter and the engine are at operating temperature. The following procedure is recommended:

- **For 1981-1986 Ford cars and light duty trucks:**
  - **What to do:** If the vehicle fails the idle portion of the ASM test, it will not be re-started. However, if your shop can not duplicate the ASM test by raising the wheels and driving in gear, a restart may be needed to determine if system is functioning properly.
- **1984-85 Honda Preludes:** To prevent the catalyst from overheating, the secondary air and feedback systems shut off automatically after idling for three minutes, however, this does not occur when the vehicle is run on a dynamometer.

- **For all other vehicles:** Vehicles may fail if not fully warmed up, idled too long, engine shut off, hot-soaked, and restarted, under hood temperature is very high.
  - **What to do:** Bring car to normal operating temperature. Drive several miles at 25 mph or above. Test car as soon as possible after driving. Car is at normal operating temperature after cooling fan has cycled on and off twice.
  - **Other vehicles that require special procedures:** Always check service manuals and service bulletins for special cautions and procedures.
- **2000 RPM limit: Warning!** Some vehicles such as certain mid 1980 BMWs, Volvos, Peugeots, and Jaguars with automatic transmissions require special procedures. These vehicles should **not** be run above 2,000 RPM in park or neutral or **transmission failure may result.** Also include all 1984, 1985, and 1988 vehicles with four speed automatic transmissions, and 1987 635CSI, 735i, and L 7s.
  - **What to do:** Any high idle tests **must** be performed on these vehicles only if they are at operating temperature and must not exceed 2,000 RPM. *Do not use the high idle procedure to bring the vehicle up to operating temperature; drive the vehicle.*
- **Traction control vehicles:** Vehicles with traction control (system names vary by manufacturer) will be tested on an ASM dynamometer, if the system can be disengaged.
  - **What to do:** If your shop has a dynamometer, test as above. If your shop does not have a dynamometer and traction control can be disengaged, jack the drive wheels up, on automatic transmissions select drive not overdrive, on manual transmissions drive the vehicle in 2nd gear, (if RPM exceed 2500, shift up). Apply brake pressure to duplicate load while maintaining speed at 25 MPH for no more than 5-15 seconds. Read or view emission readings.

These procedures should ensure that you have a valid test in your shop, but it is up to you to check for each vehicle's special requirements. At the Emission Check station, the lane operator enters the vehicle's identification number and the computer prompts the operator to perform the correct procedure for each vehicle.

Diagnose the problem

Once you have re-created the test station's emission results, you're in a position to check for causes. A key principle in diagnosing an emission failure is the air / fuel ratio and the many things that affect it.

This section describes some common problems and causes associated with each type of failure. These are starting points for your diagnosis. You may need to probe more deeply.

CO failures

A CO failure usually indicates that fuel is only partially burned due to a rich air / fuel mixture.
This can be caused by a problem anywhere in the engine's air intake system or a problem related to the fuel system. On fuel injected vehicles, causes of high CO emissions can involve such things as problems with the injectors themselves or the sensors and computer that monitor engine conditions and adjust settings.

- **Warm up the vehicle:** A large portion of false failures are related to engine and catalyst temperatures.

- **Air intake restriction:** A restricted fresh air supply enriches the air / fuel mixture because of the decreased air available for mixing with the metered fuel. This enrichment results in higher CO readings, especially at higher engine speeds. Other possible problems related to restricted air intake include: Unusually smooth idle, poor fuel economy, rotten egg odor, black smoke from exhaust.
  - **Air filter:** Don't rely on the air filter's appearance to the naked eye. Sometimes it doesn't take much of an air restriction to create a cruise CO failure. If you suspect a problem with the air filter, test the vehicle for the cruise CO failure with the air filter installed and then without the air filter. Change the filter, if needed. Certain "double," "heavy duty" or "dual stage" air filters, even if new, can cause CO failures.
  - **Choke:** A choke that sticks or does not open completely will restrict air flow and can cause excessive fuel to be drawn from various carburetor circuits.
  - **Heated air intake:** A malfunctioning heated air inlet door can result in a drivability complaint if stuck in the cold air position. If not properly diagnosed, a complaint of this type usually results in incorrect carburetor idle mixture and / or choke adjustments and high CO emissions.
  - **Fresh air inlet:** A restriction in the air inlet ducting system can result in a richer overall air / fuel ratio.
- **Crankcase ventilation:** Crankcase ventilation systems affect air / fuel ratios and problems can result in high CO emissions. Other possible problems related to crankcase ventilation include: engine oil contamination of air cleaner housing or filter, over-full dipstick reading from excessive oil dilution.
  - **Plugged PCV system:** This enriches the air / fuel mixture.
  - **Engine oil diluted with fuel:** Fuel vapors will be drawn out of the crankcase by the PCV system and enter the intake manifold below the carburetor. These vapors add to the fuel mixture supplied by the carburetor, resulting in high CO emissions.
- **Carburetor idle speed and mixture:** Improper adjustments can produce an overly rich air / fuel mixture and high CO emissions. Other problems related to improper idle speed and idle mixture adjustments can include: high HC emissions, unusually smooth idle, poor fuel economy, rotten egg odor, black smoke from exhaust.
  - **Improper adjustments of idle mixture screws and / or throttle plate position** represent the largest single cause of excessive idle CO emissions. If either is set incorrectly, the air / fuel mixture will be too rich. **Both of these adjustments must be set to the manufacturer's specification.**
  - Cruise CO failures cannot be corrected by carburetor air / fuel adjustments alone.
- **Internal carburetor malfunction:** Incorrect internal carburetor adjustment or component malfunction can produce high CO emissions, as well as some or all of the other symptoms mentioned in the previous two sections.
  - **High float bowl level:** Results in overly rich mixtures, may result from such causes as high float level settings, saturated (sunken) floats, needle-and-seat malfunctions.

- **Components:** Warped carburetor bodies, porous casting or leaking internal seals or components will result in high CO emissions. Leaking power valves and / or a ruptured power valve diaphragm also can cause high CO.

■ **Fuel Injection:** The principle of a proper air / fuel mixture applies to fuel injected engines, just as with carbureted engines. High CO emissions still result from too much fuel and very low CO emissions can indicate lean misfire resulting in high HC readings.

Therefore, most normal fuel problem diagnostic methods still apply. The majorities of fuel injection systems are computer controlled and rely on quality data.

■ **Fuel injector malfunction:** Injectors are high precision fuel nozzles and valves. Mechanical injectors use a spring-loaded valve to allow fuel to squirt out of the nozzle when the line pressure overcomes spring tension that holds the valve shut. Electronic injectors use a spring-loaded solenoid to open a pintle or ball type valve when the injector is energized by the computer. This allows pressurized fuel in the fuel rail to flow through the injector and squirt out of the nozzle.

- **Solenoid failure:** On electronic injectors, a failed solenoid results in a dead injector. More commonly, the real problem is a loose or corroded wiring connector or a bad injector driver circuit in the engine computer.
- **Clogging:** "Dirty" injectors aren't usually clogged with dirt but with a buildup of fuel varnish deposits. These can cause hesitation, high emissions, and performance problems. Even minor buildup can cause droplets in the normal cone shaped spray pattern that inhibit proper fuel atomization. Some fuel injectors can be damaged by certain cleaning compounds. Be sure to use an approved cleaner for the type of injector being cleaned.

■ **Sensors and computer controls:** Problems with sensors and devices that supply the computer with engine condition information prevent the computer from properly controlling the fuel system. This is especially true in fuel-injected engines. Many problems arise in the related systems that affect fuel injection system performance.

■ **O_2 sensor:** The oxygen sensor constantly sends a signal to the computer in response to the oxygen content in the exhaust. The computer uses this data to enrichen or lean out the fuel system. There are two ways to test the response of an oxygen sensor.

- **Output voltage:** This is the electrical signal that should change in response to oxygen content in the exhaust. Check it by varying the lean rich fuel condition and see if the output changes in response. If the output fails to change or is sluggish, clean or replace the sensor.
- **Trouble code:** Check the on-board computer for a trouble code, and then follow the diagnostic procedure outlined in the manufacturer's service manual.

■ Other systems that affect fuel-injector performance.

- **Engine cooling system:** Check the cooling system. Look for rusty coolant and inoperative thermostats, cooling fans, and cooling fan switches.
- **Intake air temperature sensor:** The sensor may be working, but the tip, threads, or both, are covered with deposits. A sensor that responds slowly may affect the computers decision to vary the fuel mix. As a general rule, a sensor not in "as manufactured" condition is suspect in any diagnostic procedure.

- **Other considerations:** Several more sensors and devices affect the computer's ability to properly control the air / fuel mixture. Never assume the same failure has the same cause on every vehicle.

■ **Tire pressure:** If the vehicle received a **loaded (dynamometer) test,** this is well worth checking. One tire ten pounds below the recommended pressure can increase CO readings. When tire pressure is low, the road-to-tire-surface area increases. This increases friction and causes the engine to work harder to reach and maintain speed.

HC failures

HC readings measure the concentration of unburned fuel emitted through the exhaust. High readings often indicate that combustion isn't happening (misfire), happening at the wrong time (ignition timing), or not being properly contained (mechanical problems).

■ **Misfiring**: In a faulty ignition system, one or more spark plugs do not fire, and no fuel is burned in the affected cylinder (misfire). The unburned HC air mixture passes through the exhaust and results in high HC emissions. Another symptom is rough engine operation.

- **Spark plug wire:** A wire can develop more resistance than the coil can overcome, so the plug does not fire. Loose or corroded connections can cause intermittent misfire under load, or, if bad enough, a continuous misfire. High under hood temperatures can break down the wire's insulation. The spark will then follow the path of least resistance to ground.
- **Spark plug:** If carbon deposits bridge or foul the electrode gap, there can be no spark. Burned internal resistors or cracked insulators can also cause misfires.
- **Crossed wires:** At least two cylinders fire in the wrong order. The engine idles rough.

■ **Timing:** If the timing differs from the manufacturer's specifications, or if the wrong source of vacuum is applied to the vacuum diaphragm(s), incorrect spark timing may result in excessive emissions. The more ignition timing is advanced, the cooler the cylinder walls, combustion chamber, and exhaust system will become. This prevents complete burning and increases HC emissions. Other symptoms can include pinging and rough idle.

- **Over-advanced:** This can result in HC reading between 500 and 900 ppm. Initial timing advanced beyond manufacturer specifications results in incomplete combustion. For electronic ignition vehicles, follow manufacturer procedures for operational checks.
- **Vacuum:** Most vehicles use ported vacuum to actuate the advance mechanism. At idle, if the port is blocked by the throttle plate, the vacuum is nearly zero. If a manifold vacuum source is used instead, the result could be over advanced timing and high HC emissions. Some manufacturers use manifold vacuum on certain engines, check service manuals to confirm this.
- **Centrifugal advance mechanism:** Failure is common. If a centrifugal advance spring is weak or broken, over advance timing can occur at idle. Failure of the centrifugal advance to advance spark timing will result in a very noticeable lack of power, poor drivability, and poor fuel economy, but will not cause higher HC emissions at idle.

- **Vacuum advance mechanism:** Binding occurs when vacuum is applied to a diaphragm that prevents the return of the advance plate when the throttle is closed, over advanced timing at idle results.
- **Vacuum controls:** Failure or incorrect installation of these units can trap full vacuum in the vacuum advance unit. The result would be incorrect ignition timing.

■ **Vacuum (air) leaks:** The carburetor provides the proper air / fuel mixture. If more air gets into the intake manifold below the carburetor due to vacuum leak, the air / fuel mixture may have too much air when it gets to the cylinders. This can result in a misfire where air / fuel mixture is too the lean to burn. The unburned fuel passes to the exhaust, resulting in a high HC reading. Other symptoms can include: rough idle, steady or intermittent misfiring, a hissing sound, lower than normal intake manifold vacuum.

- **Vacuum hose:** Hoses become brittle in high under hood temperatures. Also, care must be taken to properly reconnect all hoses and not accidentally pull one.
- **Ruptured diaphragms:** A ruptured diaphragm in a vacuum-operated component allows air to be drawn into the intake manifold. This leans out the air / fuel mixture.
- **Gaskets:** Carburetor base and intake manifold gasket leaks will draw extra air into the engine below the carburetor, causing a lean condition.
- **PCV valve:** If the PCV valve is stuck in the high flow position, or if an incorrect replacement PCV valve has too high a flow rate, the air / fuel mixture becomes lean.

■ **EGR system malfunctions:** The exhaust gas recirculation system reduces oxides of nitrogen emissions by recirculating a small amount of exhaust gas into the air / fuel mixture. If a malfunctioning EGR allows this to occur during idle, a misfire can occur. Symptoms are: high HC, low or normal CO is similar to a lean misfire, but the cause is exhaust gas dilution of the air / fuel mixture, not a lean air / fuel mixture. The carburetor idle adjustment should **not** be adjusted to overcome this condition because it would not solve the EGR problem and would cause high CO.

- **EGR valve not fully closed:** The EGR valve should close tightly, or exhaust gases will flow to the intake manifold and dilute the air / fuel mixture.
- **EGR valve gasket leaks:** If warped or blown, the gasket can allow exhaust gases to flow into the intake passage without being controlled by the valve, or can cause a vacuum leak on the intake side of the valve.
- **Improper vacuum hose routing and hookup:** Carefully check and follow the under-hood label for proper routing, sources, and operational check procedures. If the label is gone, consult the service manual.

■ **Carburetor lean misfiring:** First, before making any carburetor adjustments, always be sure that the cause of the lean misfire is not an air leak. An overly lean carburetor idle mixture can cause misfiring. Many auto makers specify idle adjustments that are quite lean and any air leak from a loose connection, broken vacuum hose, etc., will produce a lean misfire. Symptoms include high HC with very low CO, steady or intermittent rough idle, and no other air leaks detected after a very thorough check.

- **Idle mixture speed adjustments:** Set too lean, these can cause a lean misfire, but first make sure there are no air leaks elsewhere.

- **Internal carburetor malfunction:** Defects, worn components or incorrect internal adjustments can result in a lean carburetor misfire.

■ **Mechanical engine defects:** Worn or defective parts can defeat features of the engine design. Symptoms can include: very high HC with normal CO, misfire, mechanical noises, poor performance, and blue-black smoke in exhaust.

- **Burned valve:** Lower compression so that fuel is not burned, resulting in high HC emissions.
- **Camshaft:** Certain high lift camshafts can cause less than 110° overlap and can increase HC emissions, especially at idle.

  NOTE: Manifold vacuum will also be low.
- **Worn piston rings:** Lowers compression, resulting in higher than normal HC emissions (compression leak down test).

HC and CO failures

Any combination of causes may be responsible. There may be any combination of symptoms.

■ **Over rich mixture:** An extremely rich air / fuel mixture can produce high CO and moderately high HC emissions. With too much fuel in the combustion chamber, most will be partially burned, producing high CO emissions. Some of the fuel will go out with the exhaust, producing moderately high HC emissions.

■ **Over rich and misfiring:** If a misfire is detected, there may be a rich mixture and some other HC related problem. Symptoms include very high CO and HC readings. If a misfire is plainly evident, it most likely is causing the high HC emissions.

■ **Which to fix first, the HC or the CO?** Your course of action depends on whether there is an obvious misfire (or not).

- **High CO and HC with obvious misfire:** A misfiring cylinder is a likely cause of the HC failure. Another possible cause is a mechanical engine defect. **Correct the misfire condition first.** Next, check and adjust ignition timing to the manufacturer's specifications, if necessary. This will correct any problems related to over advanced initial timing. Any further diagnostic procedures to identify the CO problem will then be based on accurate readings and a stable engine. Next, correct the CO problem. HC emissions may also decrease as a result.
- **High CO and HC without obvious misfire:** First check, and if necessary, adjust ignition timing to specifications. Then, correct the CO problem first, which may also decrease HC. If still necessary, correct any HC problems.

■ **Post combustion control systems:** AIR (air injection reaction) systems and catalytic converters reduce both HC and CO. Anything which reduces their effectiveness will raise HC and CO.

- **AIR:** Air pump belts must be in place and properly adjusted. The air pump adds extra air to exhaust gases to further burn or oxidize HC and CO. Systems vary among auto makers. Carefully check and follow service manual diagnostic and repair procedures.

- **Converter:** The catalytic converter must be in place and have a supply of oxygen. Depending on the auto maker, the oxygen is provided by a lean mixture or an air pump.
- Leaded fuel reduces or eliminates the converter's effectiveness.

CO_2 failures

Carbon dioxide is a byproduct of the internal combustion engine. It is measured to help determine if the test station equipment is getting a proper sample of the exhaust. The CO_2 standard is a *minimum* of six percent. CO_2 failures generally result from exhaust system leaks (or restrictions) or from extremely high HC emissions.

- **Exhaust system:** Repairs to exhaust system components located behind the catalytic converter, (such as mufflers and tailpipes) don't count toward a waiver.
  - Exhaust system leaks in this area do need to be repaired in order to obtain a valid emission reading, but such repairs have no effect on actual emissions.
  - For exhaust system repairs from the engine up to and including the catalytic converter, get authorization from Ecology before proceeding.
- **HC**: Follow the diagnostic and repair procedures discussed earlier in this chapter and in your service manual.

Correct the problem

You're participating in the Emission Check Program because of your knowledge, experience, and training. A full discussion of repair and diagnostic procedures would fill many textbooks and service manuals. Ecology's main concern is that customers understand and technicians perform appropriate repairs.

An appropriate repair addresses the cause or causes of a failure at the Emission Check station, should reduce the reading, and doesn't significantly increase another reading or has proper diagnosis if no improvement is expected.

Suggested disclaimer form: You are required to make appropriate repairs. If a customer demands questionable repairs, you have the right to refuse to perform them. Or you may have the customer sign a disclaimer statement on the repair order, before work begins. Here is an example:

> "I have requested repairs on my vehicle, license number _____, test report number _____ that are not necessarily aimed at correcting the emission test failure. In the event my vehicle fails a re-test at the test station, I understand that the dollar amount for these repairs may **NOT** be included in the dollar amount necessary to obtain a Certificate of Acceptance (a waiver) at the test station." Ask the customer to date and sign the statement.

Here are some examples of appropriate and inappropriate repairs. This is not meant as a complete list.

CO Carbon monoxide failures

- **Appropriate repairs:** Includes repairs related to the delivery of air or fuel.
  - Carburetor or fuel injection system repairs or adjustments.

- Emission control system repairs associated with air / fuel mixture delivery.
- Oxygen sensor, computer, and computerized air / fuel mixture systems.

■ Inappropriate repairs include:

- **Ignition repairs** such as distributor cap, spark plug wires, etc.
- **Air / fuel** mixture screw adjustments for a cruise CO failure.

HC – Hydrocarbon failures

■ **Appropriate repairs:** Includes repairs related to mechanical, ignition, or fuel system problems, such as an extremely lean air / fuel ratio.

- **Carburetor or fuel injection** system repairs and / or adjustments.
- **Valve** adjustments and / or repairs
- **Ignition** system repairs.
- **Mechanical** (engine) repairs.

■ **Inappropriate repairs include:**

- Air filter.
- *most* air / fuel related adjustments and / or repairs. Contact Ecology before proceeding.

HC and CO failures

Appropriate repairs depend on the diagnosis. Try to achieve the most improvement possible. Contact Ecology before proceeding if you have questions.

CO_2 – Carbon dioxide failures

■ **Appropriate repairs:** Repairs to exhaust system components, such as mufflers and tailpipes, may be performed to eliminate leaks that give a false CO_2 failure. **But these repairs don't count toward a waiver because they do not reduce actual emissions.**

However, they may be needed to ensure an accurate test. **Get authorization from Ecology before doing exhaust system work from up to the engine and including the catalytic converter.**

■ **Inappropriate repairs:** Repairs to exhaust system components located behind the catalytic converter never count toward a waiver.

Verify the correction

Recreate the conditions that the vehicle initially failed at the Emission Check Station. This includes the warm up and time in line. Direct the customer on how to fully warm the vehicle and suggest avoiding a test station line.

If the customer limited the repairs you performed under the waiver provisions, explain what work the vehicle still needs and why it may not pass the retest. Be sure the customer signed a disclaimer.

Diesel vehicles

Authorized diesel emissions specialist repair shops ***do not need an opacity meter to be in the Program***. (Fleet self test facilities must use an Ecology approved meter, if a vehicle fails at the test station.) A technician should be able to pin point the failure and repair without an opacity meter. A Ringelman chart may be used to help check repairs.

To meet Ecology's approval (173-422-095 WAC) an opacity meter must:

- Automatically self calibrate before each test
- Provide continuous measurement of exhaust opacity unaffected by wind or rain.
- Ecology also recommends these features:
  - Accuracy of plus or minus two percent opacity.
  - Drift of less than plus or minus one percent opacity
  - Response time of less than 0.140 seconds for a change of 0-95% of full scale
  - Operating range of 32-120 °F.

Several makes and models meet these requirements and recommendations. Contact Ecology for more information before you purchase an opacity meter.

Diesel emissions standards

Washington's emissions standards are maximum limits intended to identify gross polluting vehicles. Never set a vehicle to these standards. Always use manufacturer's specifications when repairing and / or adjusting a vehicle. Use the emission standards only as a guide to assist you with repairs and / or recommendations.

Washington's diesel engine emission standards are set by chassis model year of the vehicle.

Standards for vehicle's over 8500 GVWR using the Snap test are:

Model year	Opacity standards
1980 – 1991	55%
1992 & later	40%

Standards for vehicle's under 8500 using the ASM dynamometer test:

All model years	20%

Snap-idle procedure:

To properly test a diesel vehicle in your shop, check these things first:

1. Check the vehicle for all applicable emission control components.
2. Close the hood.
3. Check the vehicle exhaust system for leaks.
4. Ensure that all fluid levels are at manufacturer specifications and that the engine is at the manufacturer specified normal operating temperature.

5. Verify that the engine's high speed (governed) rpm is set to the manufacturer's specifications.
6. On some air brake equipped vehicles, it may be necessary to release the park brake before testing

After these have all been verified, you may begin the snap-idle test.

With the engine at normal operating temperature and the transmission in neutral, move the accelerator pedal from normal idle to full power position as rapidly as possible then immediately release the accelerator pedal to base idle. Repeat the above steps until you have three readings in a row that meet or beat the standard for that vehicle. Not to exceed 9 snaps. If you have a question about any part, procedures, or problem, contact Ecology.

ASM dynamometer test procedure:

Follow steps 1-4 from the snap idle procedure above *(See Chapter 9)*.

Raise drive wheels of vehicle off ground.

Automatic transmission - use drive (not overdrive) manual transmission use second gear.

Accelerate vehicle to 25 mph (if 2500 RPMs are exceeded, select next higher gear).

Apply brake pressure to duplicate load while maintaining speed at 25 MPH for no more than 5-15 seconds. Read or view emissions readings.

To work on diesel vehicles under the Emission Check Program, you must have a *diesel* AES certificate. The standard certificate is for gasoline vehicles only.

When a vehicle fails an opacity test, it means the concentration of smoke exceeds Washington's diesel exhaust opacity standard. Opacity is the degree to which something blocks the passage of light. Opacity is measured as a percentage. A clear window has no opacity. A brick wall has 100 percent opacity.

Excessive opacity may indicate any number of possible problems with the vehicle. The first step is to note the color of the smoke. A qualified technician can, by analyzing the exhaust smoke of a diesel engine, quickly evaluate the engine's performance and determine the source of trouble.

Evaluation of exhaust smoke to determine the cause of engine trouble should never be attempted when the engine is not at its proper operating temperature. For example, when the engine is too cool, the combustion chamber is not hot enough to completely burn all the fuel. This causes late ignition and, depending on the combustion temperature, produces gray to white smoke.

Here are some suggested causes for different smoke colors:

White smoke: Gray to white exhaust smoke emitted from an engine at operating temperature indicates that part of the fuel in the combustion chamber has not been properly ignited. This may be caused by low compression due to broken piston rings, leaking valves, or misadjusted valves.

Verify the cause. Check cylinder pressure, blow by, and valve adjustment. If the engine has a misfire, locate the missing cylinder first! Then check the injectors and nozzles. There may be a leaking fuel nozzle, the opening pressure may be too low, or the injector orifices may be enlarged. The injection timing may be too late or the injectors may be misadjusted.

Gray or white smoke: Another cause for light colored smoke may be an excessive coolant leak into the combustion chamber.

Blue gray smoke: This color indicates the engine is burning excessive crankcase oil. Check the crankcase oil for proper consistency and level. The crankcase oil may be too light for the ambient temperature or the crankcase may have been over filled. Excessive oil is then thrown onto the cylinder walls and the piston rings are unable to contain it. Worn main bearings and connecting rod bearings, as well as excessive oil pressure, can also cause oil to pass by the piston rings. Excessive oil in the air cleaner or worn guides and seals can create a dangerous situation, allowing oil to be drawn in the combustion chamber during the intake stroke; the engine could easily run away. Other possible sources of blue gray smoke are worn turbochargers, superchargers, and oil seals.

Perform a compression test of the cylinders and test for excessive crankcase blow by. Check the crankcase breather; a plugged or restricted breather can increase crankcase pressures. When an oil bath cleaner is being utilized, do not forget to check for proper level. Check the valve guides and valve seals for excessive wear.

Black smoke: This indicates the fuel being injected into the combustion chamber has not burned completely. This may be caused by three basic conditions in the cylinder:

1. **Poorly atomized, fuel check for:**

   Clogged fuel injector nozzles

   Leaking injector nozzles

   Low injection pressure

   Worn nozzles

   Excessive combustion chamber carbon buildup

2. **Insufficient cylinder temperatures, check for:**

   Low compression

   Cooling system malfunctions

   Over fueling

   Injection timing out of specifications

   Low engine or ambient temperatures

3. **Poor air turbulence, check for:**

   Turbo rag

   Turbo malfunction

   Air intake restriction

   Engine lugging

   Exhaust restriction

   High altitude operation (above 1,000 feet)

   Intake and exhaust valve timing and adjustment

Black smoke has many other possible causes:

The intake system for restriction and the exhaust for excessive back pressure;

The turbo chargers boost pressure;

Valve adjustment;

Cylinder compression and crankcase blow by;

Engine cooling system and the oil level, (both will affect the engine's temperature).

If the vehicle is turbo charged, make sure the boost compensation, aneroid, or the fuel ration control system is functioning properly.

Check the injector timing, injector adjustment, or injection pump timing. Check the governor or fuel rack adjustment. If necessary, check the injector opening pressure and spray pattern. Poorly atomizing fuel can cause an increase in smoke density.

Excessive carbon build up in the combustion chamber can cause quenching. Quenching occurs when the fuel injected into the combustion chamber is saturated into the carbon build up. The flame is then cooled, prohibiting a complete burn. Any of these mechanical or operating conditions in the engine can cause black smoke.

Chapter 10: On-board Diagnosis (OBD II)

Overview:

The EPA required the 1996 and newer models of gasoline cars and light-duty trucks (8500 pounds GVWR or less) be equipped with standardized OBD systems (OBDII) to monitor the operation of most emissions-related components. If a malfunction is detected, the malfunction indicator light (MIL) on the dash is illuminated and a diagnostic trouble code (DTC) identifying the fault is stored in the vehicle computer. OBDII systems are required to have a standardized data link connector that can be used to download DTCs from the vehicle's computer during an emission check.

In addition, the EPA regulation requires "readiness codes" that indicate whether each component has been checked. This requirement was included partly to prevent the clearing of fault codes immediately prior to inspection. However, some early generation OBDII systems require extended operating time to encounter all the conditions needed to perform all diagnostic checks. This is particularly true of the evaporative system check. As a result, EPA does not require that all readiness codes be set to "ready" before an emission check can be performed. However, even after this relaxation, the readiness problems with some makes and models result in them always getting a tailpipe test rather than an OBD test at the test stations. While checking the OBD systems at the test stations has many advantages over a tail pipe test, it is going to take some time to completely resolve all the problems. This is where the repair technician can be a great help to the customer and the State in perfecting the testing process.
Your role as an Authorized Emission Specialist at the authorized shop will be to repair vehicles that fail an OBDII test using the information on the test form. You will need an OBDII diagnostic scanner that meets Department of Ecology's requirements and other diagnostic equipment so that the customer's vehicle will pass an OBDII test. This chapter offers tips on achieving that goal. (Remember, this handbook is not intended to replace Ecology approved technical training.) Only 1996 and newer model year light duty vehicles (8500 GVWR) will receive an OBDII test.

The key steps are:

- **Understand** the conditions which cause a vehicle to fail an OBDII test. Understanding how the OBDII test is performed at the test station is very important. What will fail on vehicle on an OBDII test? When will a vehicle be turned away as not being ready for an OBDII test? Knowing the answers to these questions is important in providing the best service to your customer.
- **Diagnose** the cause or causes of the emission test failure.
- **Correct** the problem by aiming the repairs at the cause or causes of the failure based on complete diagnosis.
- **Verify** that the repairs performed are correct by recreating the conditions that caused the vehicle to set a DTC(s) and commanded the MIL to illuminate, which resulted in the vehicle failing an OBDII emission test.
- **Readiness:** Is the vehicle ready for an OBDII test? This is an integral part of the repairs performed and if not included in the repair process, will result in the repairs being incomplete.

Understand the conditions under which a vehicle will fail an OBDII test:

To do this, an understanding of the steps a vehicle will go through at the test station is needed. The following is a description of the test procedure performed at the test station resulting in a failed test.

1. The vehicle information is collected at the first position and entered into the computer. If any money is due, it is collected at this time.
2. The gas cap is tested while in position one and a fail or pass for the gas cap is recorded. (The driver of the vehicle will be instructed to turn the vehicle off for safety reasons before performing the gas cap test.) A valid test must be completed in position two before a gas cap test is valid.
3. The vehicle is moved to position two where the lane operator will perform the first step of the OBDII test.
4. The lane operator will inspect to see if the Check Engine Light (MIL) comes on either briefly or continuously while the key is in the on position, without the engine running (KOEO). A pass or fail will be recorded.
5. The lane operator will start the vehicle and inspect to see if the Check Engine Light (MIL) comes on while the key is in the on position, with the engine running (KOER). A yes or no will be recorded.
6. The lane operator will shut the vehicle off, remove the key from the ignition, and then proceed to plug the adapter into the Data Link Connector (DLC) of the vehicle. ***If the DLC is missing or damaged to make it inaccessible, or modified in any way, the vehicle will fail the OBDII test.*** Once the adapter has been plugged into the DLC, the vehicle will be started and the lane operator will initiate the communication part of the OBDII test. If no communication can be established, the vehicle will fail for no communication and the test will stop at this point. A test form will be printed. However, if communication is established, then the test will continue on to the next phase.
7. After communication is established with the vehicle, a check for any Diagnostic Trouble Codes (DTC)(s) that have commanded the MIL to illuminate is performed. If any DTC(s) are present that have commanded the MIL to illuminate, the vehicle will fail the OBDII test. At this time, a check for readiness monitor status (continuous and non-continuous) is performed and recorded on the test form. A vehicle will be considered ready for an emission test if DTC(s) are present that have commanded the MIL to illuminate.
8. Any DTC(s) that have commanded the MIL on are printed on the test form with the generic statement associated with the specific DTC(s), as well as the results of the KOEO and KOER part of the test. This includes the status of the readiness monitors (continuous and non-continuous) at the time of the test.
9. If no DTC(s) are present that have commanded the MIL to illuminate, the system will perform a check for readiness monitor status (continuous and non-continuous). If a 1996 through 2000-model year vehicle has three or more readiness monitors not set to ready, or a 2001 or newer model year vehicle has two or more readiness monitors not set to ready, the vehicle is rejected as not being ready. Any funds collected are returned to the customer and a handout is provided that explains the reason why the vehicle can not be tested.
10. If the readiness monitors for a 1996 to 2000 model-year vehicle has two or less readiness monitors not set to ready, or a 2001 or newer model-year vehicle has one or fewer readiness monitors not set to ready and the KOEO part of the test passed, the vehicle will pass the OBDII test and a test form will be printed.

■ **What will fail a vehicle in an OBDII test?**

KOEO: The Check Engine Light (MIL) does not come on during Key On Engine Off and a check for non-continuous readiness monitor shows the vehicle is ready for an emission test.

DTC: A DTC is set that has commanded the Check Engine Light (MIL) on and the DTC is a generic SAE controlled code.

Missing, damaged or modified: A Data Link Connector that is missing, damaged, inaccessible, or modified.

No Communication: No communication was established between the test equipment and the vehicle during the test.

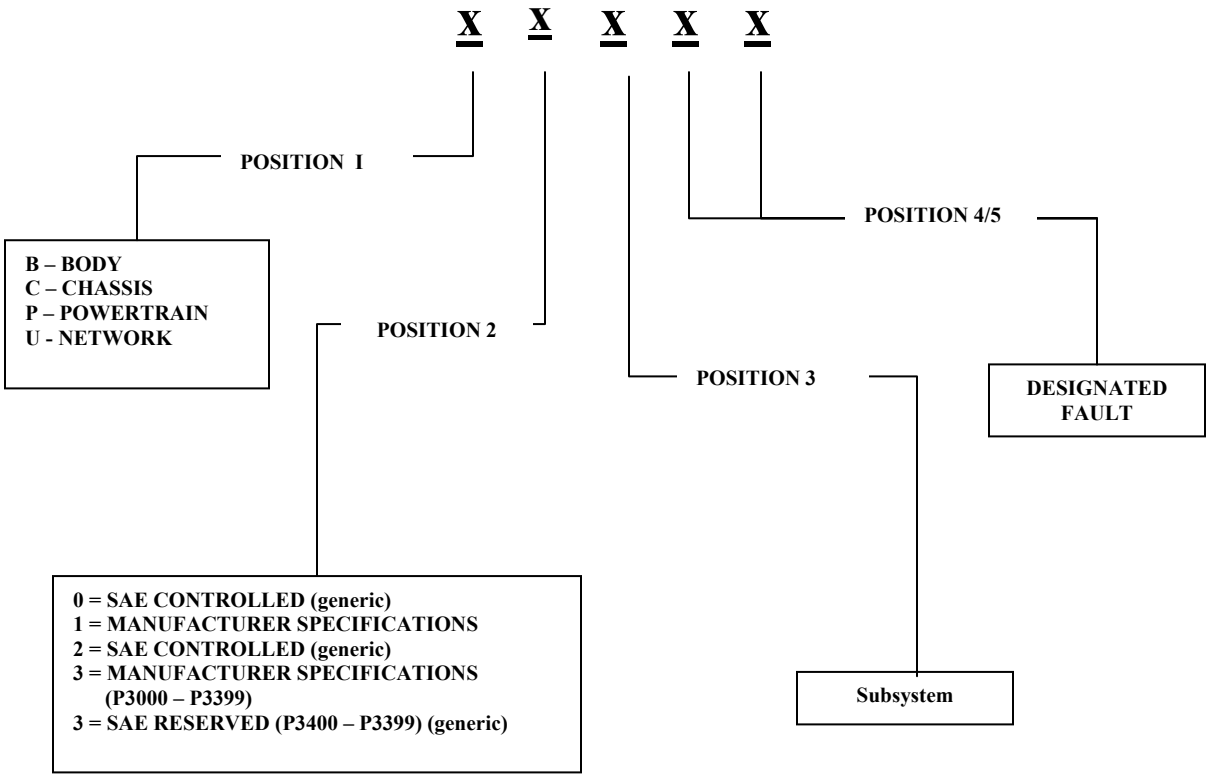
■ **When will a vehicle be ready for an emission test or be turned away as not being ready for an OBDII emission test?**

Any 1996-2000 model-year vehicles that have three or more Non-continuous Monitors with Readiness Flags set to "not completed," and there are no Diagnostic Trouble Codes (DTC)(s) that have commanded the MIL to illuminate, will be rejected as not being "ready for testing." No test form will be printed. Additionally, 2001 model-year vehicles and newer that have two or more Non-continuous Monitors with the Readiness Flags set to "not completed," and there are no Diagnostic Trouble Codes (DTC)(s) that have commanded the MIL to illuminate, will be rejected as not being "ready for testing." No test form will be printed. The test station will provide information explaining the reason why the vehicle cannot be tested.

- **What diagnostic trouble codes (DTC)(s) will fail a vehicle?** Any generic SAE controlled DTC(s) that have commanded the MIL to illuminate will result in an OBDII emission test failure.

- **Diagnostic Trouble Code (DTC):** An alpha numeric format that defines a fault associated with a specific diagnostic test. Following is a simplified chart showing the structure of a diagnostic trouble code (DTC).

DTC STRUCTURE



Position 1: Used to identify the On-board Diagnostic system that is involved.

Position 2: Used to identify the code as a generic (SAE controlled) or manufacture specific. The generic code (SAE) controlled) is a common code used by all manufacturers in describing a fault in the system.

Position 3: Used to indicate which part of the subsystem is involved.

Position 4/5: Used to identify which components or section of the system that has a fault.

Diagnose the problem

OBDII testing is unique. It levels the playing field between the test station and the repair shop. No longer are we testing using different technology. The technology available to the test station is no different than what is available to the repair industry. The difference lies between the exhaust gas analyzer and OBDII test equipment. There is very little correlation between an OBDII test and an exhaust gas analyzer test. For every 100 vehicles that fail an OBDII test, only three fail an exhaust gas analyzer test.

How is this possible? There is a logical explanation for the lack of correlation between the ASM test using an exhaust gas analyzer and an OBDII test. An ASM test using an exhaust gas analyzer takes a snapshot of the vehicle emission levels based upon the conditions that exist during the test.

The OBDII test looks at the diagnostic history recorded by the vehicle's On-board Diagnostic System to determine if any emission related failures exist that would set a DTC(s) and command the MIL to illuminate. Because of this, it is very possible to analyze the gas sample from the tail pipe of a vehicle that failed an OBDII test using the gas analyzer and see good readings. In most cases, in order to duplicate a failure with an exhaust gas analyzer, the vehicle would have to receive a test using the Federal Test Procedure (FTP) during the time the OBDII failure occurred. Additionally, many DTC(s) related to evaporative emissions will not show up during a tail pipe test using an exhaust analyzer. For example, a DTC (P0455) for a fuel evaporative emission control system leak detected (gross leak) which will never generate an exhaust gas analyzer failure measured at the tail pipe *because* the DTC being set is for a gross leak in evaporative emissions. Using an exhaust gas analyzer to demonstrate to the customer that a vehicle is passing an OBDII test is like using an exhaust gas analyzer that is ***not turned on*** to demonstrate that a vehicle is passing an exhaust gas analyzer test. Bottom line here, *do not use an exhaust gas analyzer to demonstrate a passing OBDII test.*

EPA requires the vehicle manufacturers to design their OBDII systems to alert the driver when:

- *There is a problem that could cause the vehicle to substantially fail the Federal Test Procedure (FTP).*
- *The On-board Diagnostics are not able to monitor the operation of the components that affect emissions.*
- *There is a problem that could cause the failure of an emission control component.*

1. **Ask questions.** Whoever has contact with the customer, technician, manager, or service writer should ask these questions of the customer:

   What was the customer doing before, during, and after the MIL illuminated? Asking these questions may not provide the information needed, but instead may provide some information that will lead into other questions that do. As it is with a gas analyzer test, it is with an OBDII test. You can never get enough information from the customer.

2. **Read the test report.** This is an important step in diagnosing the failure, knowing what the vehicle failed for. If there is any question regarding the test, please give Ecology a call before proceeding.

   - **Duplicate the test.** Connect the OBDII scanner to the vehicles DLC and verify the failure. It is very possible for a vehicle to fail an OBDII test at the test station and not fail at the repair facility. It is by design that OBDII technology works in this manner.

DLC and Location

The Diagnostic Link Connector (DLC) is common to all OBDII vehicles. The OBDII Diagnostic Link Connector has 16 pins; 9 pins are used at the discretion of the vehicle manufacturer and 7 pins are reserved for data transfer by any OBDII scan tool. Pins 2, 4, 5, 7, 10, 15, and 16 are the generic pins mandated by SAE J-1962. They allow the generic scan tool to access the Diagnostic Trouble Codes (DTC) and generic OBDII data that could be related to an emission fault; PCM inputs and outputs, etc.

OBDII specifies that the DLC is to be located inside the passenger compartment of the vehicle. The DLC is generally located somewhere between the left side of the dash and approximately 12" to the right of the vehicle centerline. It is located out of view of the passengers, but with the passenger door open, it can be easily viewed and is accessible to a kneeling technician that is outside of the vehicle. *See Appendix 12.*

3. No Communication: A vehicle that failed an OBDII test for no communication may be a very minor repair. When diagnosing a vehicle that failed for no communication, ensure that pins 4, 5 and 16 are in good physical condition at the Data link connector (DLC) and that no fuses are blown that may affect communications. Pins 4 (chassis ground for the scan tool) and 16 (battery + voltage for the scan tool) are needed for the scan tool to power up, and terminal 5 is for signal ground for communication. At the same time, perform an inspection of the other pins needed for communications *and see that they* are in proper physical condition. The pins that need inspection vary between manufacturer, make and model of the vehicle, and are dependent upon which OBDII communication protocol is used. In most cases, a DLC connector will have more pins available than needed for communication. The extra pins are for manufacturers to use as they see fit. There are five OBDII protocols used. Here is a list and a diagram that will help determine the pins needed for communication based on each OBDII protocol. Not all pins assigned under a particular communication protocol may be used by the vehicle manufacturer.

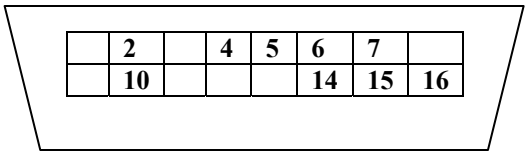
J1850 VPW: Pins 2, 4, 5, and 16

ISO 9141-2: Pins 4, 5, 7, 15, and 16

J1850 PWM: Pins 2, 4, 5, 10, and 16

KWP 2000: Pins 4, 5, 7, 15, and 16

CAN (Controller Area Network) Pins 4, 5, 6, 14, and 16



2 - Communication Bus (+)
4 - Chassis Ground
5 - Signal Ground
6 - SAE J2284 (Can High)
7 - ISO K Line
10 - Communication Bus (-)
14 - SAE J2284 (Can Low)
15 - ISO L Line
16 - Battery +

Will a transmission code (DTC) that has illuminated the MIL be a valid OBDII failure?

Yes: The manufacturer has been given some leeway on what constitutes a failure that will result in a DTC being set and the MIL commanded to illuminate. Perform diagnosis of the failure before making a determination that the transmission is at fault. In some cases, it is possible to have a DTC set that is related to another part of the system as well as a DTC for the transmission. In this case, the DTC set by another system may be the reason the transmission DTC is present.

Readiness Monitors (non-continuous). A customer complains that their vehicle was not able to receive an OBDII emission test due to the vehicle not being ready.

What's next?

There are several options at this point.

a. Explain to the customer the reason why their vehicle could not receive an OBDII emission test. Then instruct the customer to drive the vehicle for about a week before testing it again. The problem with this option is that there may be an unknown that prevents the vehicle from becoming ready for an emission test, and one, two, or four weeks of driving will never fix it.

b. Provide the information in "a" and ask questions and provide other options. Ask the question: has the battery on the vehicle been replaced or found low on voltage due to lights being left on or has it been in a repair shop recently? If the answer is yes, then it is possible that just driving the vehicle will fix the problem, if no, then the possibility exists that an unknown problem may be the reason the vehicle is not ready for an emission test. In either case, the customer should be provided with the option of a diagnosis to ensure that no problems exist. In some cases a pending code can prevent readiness monitors from setting to ready. If this is the case, driving the vehicle until the DTC is either cleared from the pending area or matures, to a DTC that commands the MIL to illuminate, may be necessary. If after completing diagnosis it is determined that the vehicle has a problem preventing the readiness monitors from completing, and the problem cannot be found, give Ecology a call for assistance in completing the emission testing process. If a DTC is set that commands the MIL to illuminate while driving the vehicle, then instruct the customer to take the vehicle in for a test before performing any repairs.

In some cases, the customer may request that the technician drive the vehicle until it is ready for an OBDII emission test. Although this option is acceptable, the shop needs to explain to the customer that Ecology does not require it and that a customer's regular driving habits may be sufficient to bring a vehicle to ready for an OBDII emission test.

Freeze frame data: When an emission related failure occurs and a DTC is set, the vehicle's operating parameters at the time the fault was recorded will be stored in memory. This information can be very valuable when diagnosing a vehicle that failed an OBDII test. The information available varies from manufacturer to manufacturer. Here is a possible list of information that could be available in freeze frame data. It is not a complete list.

Engine RPM

Engine load

A / F ratio

Fuel pressure

Loop status opened or closed

Coolant temperature

Vehicle speed

Fuel trim

Intake manifold pressure

4. Equipment. Some of the same equipment used in diagnosing vehicles that fail a tail pipe emission test will be used to diagnosis an OBDII test failure. The scanner provides information on what system or systems failed the test and a starting point for further diagnosis.

Correct the problem / effective repairs.

You're participating in the Emission Check Program because of your knowledge, experience, and training. A full discussion of repair and diagnostic procedures would fill many textbooks and service manuals. Ecology's main concern is that technicians perform appropriate diagnosis and repairs.

An appropriate repair includes diagnosis and / or repairs that address the cause or causes of a failure. A complete diagnosis results in the cause or causes of the problem being properly identified. This allows for effective repairs that correct the problem. Perform repairs based on a complete diagnosis of the failure.

Will a DTC that is set that has commanded the MIL to illuminate indicate the exact repair necessary?

NO. Do not rely on the DTC to describe the exact repair.

Will the repair of one problem result in clearing of more than one DTC?

YES. A possible scenario could be where a vehicle failed with a P0172 (system too rich bank 1) and P0175 (system too rich bank 2) and P0420 (main catalyst efficiency below threshold bank 1) P0432 (main catalyst efficiency below threshold bank 2). After repairing the vacuum leak and driving the vehicle, the DTC related to the catalyst cleared itself. The P0172 and P0175 were set first, which illuminated the MIL. The continued operation of the vehicle with the system too rich code caused by a vacuum leak eventually resulted in the catalyst being unable to maintain efficiency, setting P0420 and P0432.

After performing repairs, the original DTC is no longer present and a new DTC has been set.

Why? Some manufacturers may not choose to continue running the non-continuous readiness monitors past the point of detecting a failure in the system. This will result in a DTC that has been set and the MIL commanded to illuminate. The non-continuous readiness monitor will run each time the criteria for the drive cycle is met for that monitor and will stop each time the test detects the failure is still present. When the DTC meets the criteria for clearing the DTC and turning the MIL off, then the monitor will complete its full test of the system.

The days of opening a hood on vehicles and performing repairs without any first-hand knowledge of the vehicle are gone. Up to date repair technical manuals and manufacture specific manuals will be needed. Equipment used to diagnose OBDII failures will be nothing short of what would be expected of a technical engineer to use. Training will become a part of your everyday operation in order to keep up with the changing technology. The bottom line, step up and by the manuals, equipment, and attend the training needed or technology will leave you behind, resulting in incomplete diagnosis and ineffective repairs.

Verify repairs performed:

Verify that the repairs performed are correct by recreating the conditions under which the vehicle set a DTC(s) and commanded the MIL to illuminate, which resulted in the vehicle failing an OBDII emission test.

DO NOT CLEAR ALL CODES USING AN OBDII SCANNER OR DISCONNECTING THE BATTERY UNLESS IT IS YOUR ONLY OPTION.

In some cases, verification of repairs is just a matter of installing a functional part and testing to see if it works after installation. In other cases, it will require that the vehicle be driven under the same conditions in which the DTC(s) was set, a drive cycle. ***Freeze frame data,*** if available, becomes very important at this point. It provides the vehicle operating parameters that existed during the same time the fault DTC was detected. It also provides the conditions that may be necessary to recreate to verify that the repair(s) performed were effective in fixing the problem.

Drive cycle: An OBDII drive cycle's purpose is to run all the on-board diagnostics so that the non-continuous readiness monitors are set to complete. Performing a drive cycle requires strict adherence to manufacturer's specifications per make, model, and year of vehicle. It is not the same as a successful trip.

Trip: The definition of a successful trip is where a key-off, key-on cycle occurred allowing the vehicle to operate under the same conditions that detected the fault DTC and commanded the MIL to illuminate. During that time, a given diagnostic was performed that determined if the fault DTC was still present.

Will the completion of a drive cycle per manufacturers' specifications be necessary after every repair?

NO. Familiarity with how the DTC was detected is needed. Did a continuous monitor or a non-continuous monitor detect it? What were the vehicle operating parameters (freeze frame data) at the time the fault DTC was detected? A DTC that was detected by a continuous monitor may clear and turn the MIL off immediately when no detection of the problem is present during the next successful trip. DTC detected during the running of a non-continuous monitor will need a drive cycle to clear the DTC and turn the MIL off.

Will every fault DTC detected clear and turn the MIL off after one drive cycle or trip?

NO. Manufacturers have some flexibility on how a DTC(s) is set. A manufacturer may use a single successful trip or one complete drive cycle (or two successful trips or two drive cycles) to set a DTC. Because of this, a DTC that has commanded the MIL to illuminate after two successful trips or drive cycles were completed may require two successful trips or drive cycles to be completed to clear the DTC and turn the MIL off. This does not hold true for all manufacturers. Some will clear the DTC after one successful trip or drive cycle and turn the MIL off but maintain the DTC as pending for up 80 drive cycles or successful trips. Another important part of the enabling criteria that needs attention is the vehicle operating parameters (freeze frame data) present at the time the DTC was detected. For example, an engine load and the RPM are part of the enabling criteria for clearing a DTC and turning the MIL off. In some cases, the vehicle's speed, RPM, and load (but are not limited to) need to be similar to the original conditions within a set percentage. Therefore, if the vehicle load was heavy and the speed was 45 MPH at 4000 RPM when the DTC was detected, the same conditions would need to be recreated during the drive cycle or trip.

Readiness

Is the vehicle ready for an OBDII emission test? This is an integral part of the repairs performed and if not included in the repair process, will result in the repairs being incomplete.

The setting of a non-continuous monitor from not ready to ready does not indicate the vehicle will pass an OBDII emission test, instead it indicates that the vehicle is ready for an OBDII emission test. If during the test (running of a non-continuous monitor) a fault is detected DTC, the readiness monitor will be set to ready so as to indicate operational status has been verified and a DTC will be recorded in pending if it is a two trip DTC, if it is a single trip DTC the DTC will be recorded as a fault, and the MIL commanded on. They're numerous reasons why a vehicle may not set to "ready." A pending code will almost in all cases prevent a readiness monitor from being set to ready as long as it is present in the pending area. In some cases manufacturer's software by design will make it virtually impossible to set a readiness monitor to ready.

What if the operating parameters that existed during the time the DTC was set and the MIL commanded on cannot be recreated? In cases like that, the only option may be to clear all codes using an OBDII scanner or disconnecting the battery. If the clearing of all codes is performed, the customer will not be able to receive an OBDII test at the test station due to the vehicle not being ready for an OBDII emission test, **UNTIL THE DRIVE CYCLES ARE COMPLETED SETTING ENOUGH NON-CONTINUOUS READINESS MONITORS TO READY FOR AN OBDII EMISSION TEST.** If the drive cycles are not completed before returning the vehicle to the customer and enough time exists for the customer to drive the vehicle in a manner that will set enough of the readiness monitors to ready before returning for a test, then the option of clearing the codes may work. Remember, if the driving habits of the customer are not consistent with the parameters necessary to complete a drive cycle, the vehicle will never be ready for an OBDII emission test.

After clearing the codes using an OBDII scanner or disconnecting the battery, a pending code is set while completing an OBDII drive cycle and the readiness monitors will not set to ready.

Why? Until the pending code set either matures to a DTC that will command the MIL to illuminate or is cleared from the pending area as no longer being a possible fault DTC detected, the readiness monitor will never set to ready. This is not a fault of the system it is by design that it functions in this manner. This may also indicate that the repairs performed were not effective in fixing the detected fault DTC. Remember it is possible for a new fault DTC to be detected by design of the OBDII system during a drive cycle after repairs.

After clearing the codes using an OBDII scanner or disconnecting the battery and completing the drive cycle for a vehicle numerous times, none of the readiness monitors will set to ready and no pending codes are present.

Why? This is a problem with some manufacturer's software design per make, model and year. This was caused by some manufacturers coming to a different understanding of how a readiness monitor will be set to ready and not a design flaw in OBDII. This problem has been addressed and all manufacturers beginning in the year 2001 will be running readiness monitors using simpler methods or a better standardized method. Here is a list of some vehicles that Ecology is aware of that have problems setting the readiness monitor to ready.

1996 – 1998 Volvo except 850 Turbo; Mitsubishi all; Saab all;

1996 Subaru all; Nissan all; Infinity all

Some 1996 Chryslers/Dodge/Plymouth/Eagle products manufactured prior to 12/95

Some Canadian vehicles manufactured for sale in Canada from 1996 – 1998 may not be able to set readiness monitors to ready. Call Ecology for assistance with Canadian vehicles that might be believed to meet these criteria. Below is a diagram of readiness monitors available in most vehicles.

READINESS STATUS		
	MONITOR	**STATUS**
1.	**Misfire**	**Ready (always shows ready)**
2.	**Fuel system**	**Ready (always shows ready)**
3.	**Comprehensive Component**	**Ready (always shows ready)**
4.	**Catalyst**	**Ready**
5.	**Heated Catalyst**	**N / A**
6.	**Evaporation system**	**Ready**
7.	**Sec Air system**	**N / A**
8.	**A/C system refrigerant**	**N / A**
9.	**O2 Sensor**	**Ready**
10.	**O2 sensor heater**	**Ready**
11.	**EGR system**	**Ready**

Certificate of Acceptance (Waiver)

In some cases the only option is a waiver. A waiver does not mean bad repair but instead, in most cases, a repair and / or diagnosis that results in a vehicle still failing an OBDII which resulted in a certificate of acceptance (waiver) being issued at the test station. If the customer limited the repairs performed under the waiver provisions, explain what work the vehicle still needs and why it still fails with approximate costs. If further diagnosis is needed to determine the cause or causes of the failure, then state: ***"further diagnosis needed to determine cause or causes of the failure,"*** with an explanation as to why the diagnosis was not performed.

What is the criterion a vehicle needs to meet in order to receive an OBDII waiver?

1. Failed at least two tests;
2. Diagnosis and repairs performed between the first and the last test;
3. The minimum amount spent at an authorized repair facility is $150; for 1981 and newer, $100 for older.
4. The repair facility is authorized by the Department of Ecology;
5. The certified technician is listed at the authorized repair facility;
6. The vehicle has no emission control devices that are missing, modified, or disconnected.
7. This includes the Data Link Connector (DLC) on the vehicle for OBDII and Check Engine Light (MIL).
8. The diagnosis and / or repairs are aimed at the cause or causes of the failure.

I have performed repairs that I know fixed the problem but there is not enough time to perform the drive cycles to set the readiness monitors to ready. If I clear the code(s), the vehicle will not be ready for an emission test. Should I clear the codes?

NO. If steps 1-7 above are met, then DO NOT CLEAR THE CODES. Send the customer to the test station with the code(s) present and the MIL on. Explain to the customer why the MIL is on and that the MIL may turn off after some driving time, also, explain to the customer why the MIL might not turn off and provide a set time for the customer to return if the MIL does not turn off. That way further diagnosis and / or completion of a drive cycle can be accomplished.

OBDII Scanner

On July 1, 2002 OBDII testing started in all Emission Testing areas. Do you, as an Ecology authorized technician or repair facility, have the equipment necessary to perform repairs and / or diagnosis for OBDII failures for the purpose of receiving a Certificate of Acceptance (waiver)?

The Ecology requirements for an OBDII scanner are very basic. The OBDII scanner you select should be based on your needs as a repair shop participating in the Department of Ecology Emission Check Program and be capable of duplicating the OBDII test failure. There are four areas an OBDII scanner will need to be capable of demonstrating its ability to perform in order to meet Ecology's requirements for an OBDII scanner.

Retrieve the Status of Non-continuous monitors for readiness **(completed or not completed).**

Here is a list of possible support Non-continuous (once trip) monitors.

* Catalyst
* Heated catalyst
* Evaporative system
* Secondary air system
* Air conditioning system
* Oxygen sensor
* Oxygen sensor heater
* EGR system Diagnostic Trouble Code(s) (DTC) present **YES / NO** The MIL light (check engine) commanded on **YES / NO**

Retrieve Generic OBDII DTC codes that are set and have commanded the MIL to illuminate.

The above information is provided by most manufacturers of OBDII compliant scanners on the market today. OBDII compliant scanners are capable of providing more than just the generic OBDII information needed to duplicate an OBDII test. This information is sometimes referred to as Enhanced Data or freeze frame data. Some of the information available under Enhanced Data is manufacturer specific DTC(s). The manufacturer of the OBDII scanner should be able to provide you with a list of available features. If you already own an OBDII, scanner you will want to check with the manufacturer of the scanner for the availability of any possible software or cartridge upgrades that will allow the scanner to meet Ecology's requirements before purchasing a new scanner. This document is provided as a guideline for selecting OBDII scanner that will meet Ecology's requirements, and should not be used as a recommendation for any specific OBDII scanner.

Appendix 1: Glossary / Index

Acceleration simulation mode (ASM): An enhanced emission test procedure using a steady state dynamometer to test a vehicle under load. The load is determined by the vehicle's actual weight. *(See dynamometer, steady state.)*

Actuators: Engine components controlled by the computer in response to inputs and sensors. (*See computer, feedback system, sensors.)*

Advertising: All promotions and publicity that describe an establishment as an authorized Emission Check facility. must be changeable and not permanent.

AES: (See *Authorized Emission Specialist.)*

AIR: The mixture of gases that make up Earth's atmosphere.

A. I. R.: Air injection reactor. Enhances catalytic converter performance by inserting fresh air into the exhaust ahead of the converter, or into the converter itself.

AIR / FUEL ratio: The mixture of air and fuel entering the engine's cylinders, produced by the carburetor or fuel injection system. The ideal ratio is 14.7 parts of air to one part of fuel by weight. A mixture is called "lean" if it has more air, "rich" if it has more fuel.

Air Pollution: The release of foreign matter into the air by natural events and human activity. Human caused emissions can be controlled by people.

Air pump: Supplies air needed for air injection systems.

Analyzer: A device for measuring emissions from the tailpipe.

Appropriate repair: To diagnose the cause or causes of an Emission Check failure and to repair one or more of these causes. An appropriate repair should reduce at least one emission test reading, without a major increase in the other or have proper diagnosis if no improvement is expected.

ASA: Automotive Service Association. An organization of independent automotive repair shop owners.

ASE: National Institute for Automotive Service Excellence. Certifies professional automotive technicians in emission repair and other specialties.

ASM: (See *Acceleration simulation mode.)*

Authorized Emission Check repair facility: An automotive repair establishment whose owner or manager agrees in writing to: 1) employ at lease one Authorized Emission Specialist; 2) own and properly maintain an Ecology-approved exhaust analyzer (*gasoline shops only*), and an Ecology approved OBDII compliant scanner (*if an OBD shop*); 3) allow Ecology Emission Check field staff to visit and inspect; and 4) abide by Emission Check requirements and policies.

Authorized Emission Specialist (AES): A person who has received an AES certificate from Ecology after having: 1) demonstrated "…by completing an approved course or passing an approved examination…" and understanding the requirements of the Emission Check program and of motor vehicle emission repair, and 2) agreed in writing to abide by the requirements of the Emission Check Program.

BAR: California Bureau of Automotive Repair.

CARB: California Air Resources Board.

Carbon dioxide (CO_2): A gas produced by burning carbon based fuel, including gasoline and diesel. Not controlled under I/M programs, but associated by many scientists with global warming.

Carbon monoxide (CO): A colorless, odorless gas produced by burning carbon based fuel. Interferes with the blood's ability to carry an deliver oxygen.

Carburetor: Mixes gasoline and air for combustion.

Cash: One way of paying the $15 Emission Check station fee, (no Canadian currency).

Catalyst: A substance that accelerates or enhances a chemical reaction, but is not changed itself. The main component of a catalytic converter. *See Catalytic converter.*

Catalytic converter: Reacts with exhaust gases to change CO, HC and NO_x to carbon dioxide and water.

Certificate of Acceptance: A document, usually issued at the test station, allowing a vehicle that fails an Emission Check retest to complete the registration or reregistration process, so long as the requirements for appropriate repairs and intact emission controls are met. Commonly known as a waiver. Usually printed on a Vehicle Emission Test Report form.

Certificate of Compliance: A document issued at the test station certifying that a vehicle has passed an Emission Check inspection. Printed on a Vehicle Emission Test Report form. See *Vehicle Emission Test Report.*

CFC: See *Chlorofluorocarbons.*

Check: One way of paying the $15 Emission Check station fee (local only, travelers check $50 and under).

Chlorofluorocarbons (CFC): A group of synthetic chemicals, including R 12 automotive air conditioning refrigerant, associated with "Thinning" of Earth's protective ozone layer in the upper atmosphere. By international agreement they are being phased out of production. It is illegal under U.S. federal and state law to knowingly vent CFC's into the air. Anyone working on automotive air conditioning must have EPA approved certification, use EPA approved CFC recovery equipment, and keep proper records.

Clean Air Act: 1) A federal law that sets standards for the nation's air quality and outlines the strategy to clean up dirty air or maintain clean air. 2) A state law that enables Washington State to assume delegated authority from the EPA to protect air quality at the state and local level. Authorizes Ecology to conduct an Inspection / Maintenance Program where required under the federal Clean Air Act.

Closed loop system: (See *Feedback system.)*

CO: *(See Carbon monoxide.)*

CO_2: (*See Carbon dioxide.)*

Computer: Uses electronic information provided by sensors to control actuators. (*See Actuators, Feedback system, Sensors)*

Continuous Monitor: Misfire, comprehensive component, heated catalyst, secondary air system.

Credit Cards: As of July 1, 2002 the Emission Check stations accept (Visa, MC, Discover,) for the $15 Emissions Check fee

Customer contact staff, non AES: In authorized Emission Check shops, Ecology recommends that non AES service writers, managers, etc. who have contact with customers should be familiar with this handbook's information on Emission Check, basics, waiver, tampering, change in ownership of vehicles, common customer concerns, oxygenated gasoline, test station information, and Washington's auto repair law.

Diesel technicians: AES technicians who do Emission Check repairs on diesel vehicles must have a diesel AES certificate. This handbook contains special diesel references.

DOE: U. S. Department of Energy. (*See Ecology.)*

D. T. C.: Diagnostic Trouble Code

Drive Cycle: A manufacture-defined pattern during which a specific make, model, and year of vehicle will operate under. This allows the on-board diagnostics to determine if a vehicle is ready for an emission test (readiness status). During a drive cycle, no concern is placed on whether the emissions system passed or failed the test, only that the on-board diagnosis is completed.

Dynamometer: A device for testing or tuning a vehicle while running in gear under a load. The vehicle drive wheels turn rollers to which roll resistance, or a load, is applied. It is measured in horsepower.

Dynamometer, steady state: A dynamometer capable of operating only at a steady, set speed. Used at test stations in Washington's Emission Check Program.

Dynamometer test recreations in repair shops: (*See Chapter 5.)*

Dynamometer, transient: A dynamometer capable of putting a vehicle through a routine of acceleration and deceleration. Used in IM 240 emission tests.

Ecology: 1) Short for Washington State Department of Ecology. Responsible for implementing the state clean air act, in coordination with EPA and local air quality agencies. 2) The science of the relationship between living things and their environment.

EGR: (*See Exhaust Gas Recirculation Valve Chapter 9.)*

Emission Check: Promotional name for the Inspection / Maintenance (I/M) Program administered by the Washington State Department of Ecology. (*See Inspection / Maintenance.)*

Engine switching: (*See Chapter 4.)*

Engines, imported: (*See Chapter 4.)*

EPA: U. S. Environmental Protection Agency. Responsible for implementation of the federal Clean Air Act, including supervision and approval of state Inspection / Maintenance Programs.

Equipment requirements, repair shops: (*See Chapter5.)*

Evaporative emissions: Hydrocarbon fumes from fuel which evaporate from the fuel tank and carburetor. Controlled by sealing the fuel system and using a charcoal canister to trap vapors. Many western Washington filling stations use special nozzles to catch gasoline fumes when fuel tanks are being filled.

EVP: Evaporative emission system.

Exhaust analyzer: (*See Analyzer.)*

Exhaust gas recirculation valve (EGR): Uses exhaust gases to control combustion chamber temperature and reduce NO_x emissions.

FEC: (*See Fuel evaporation control.)*

Feedback system: An oxygen sensor measures oxygen in the exhaust. A computer uses this information to adjust fuel delivery. Also known as a closed loop system. See Actuators, Computer, Sensor.

Fees, Test station: (*See Chapter 6.)*

FI: *See Fuel injector, MPFI* and *TBI.*

Fine particles: Extremely small pieces of solid or liquid matter emitted from burning various fuels. Also, released into the air as fine dust from roads, farms and industrial operations. Can cause lung damage.

Forms: See Chapter -- for common forms used in the Emission Check Program.

Freeze Frame: Data retained in memory when a DTC is set, providing the parameters the vehicle was operating under at the time the DTC was set, that can be retrieved by the technician using a generic or manufacture specific OBDII scan tool

FTP: Federal Test Procedure

Fuel evaporation control: Stores unburned gasoline vapors in a charcoal canister and releases them later when needed. Also called EVP.

Fuel injector: A precise nozzle and valve that meters fuel.

Gasoline, leaded phase-out: (*See Leaded gasoline phase-out).*

Gasoline, oxygenated: (*See Oxygenated gasoline).*

Gasoline, Reformulated: (*See Reformulated gasoline).*

Gray market vehicle: A vehicle made in another country for use in that country, but privately imported to the U.S. without required emission controls.

Gross Vehicle Weight Rating.

HC: (*See Hydrocarbons).*

Hours, test station: 9:00 am to 5:00 pm Monday through Friday
9:00 am to 1:00 pm Saturday – Closed Sundays and most State Holidays

Hydrocarbons (HC): A family of toxic and cancer causing vapors that evaporate from gasoline and other oil-based products.

I / M: (*See Inspection / Maintenance).*

Information, toll-free for general public: Clark and Pierce Counties 1-800-453-4951 8-5 Monday – Friday; King and Snohomish Counties 1-800-272-3780 8 am – 5 pm Monday – Friday; Spokane County (509) 329-3491 8am – 5 pm Monday – Friday. If you require this publication in an alternate format, please contact Tami Dahlgren at (360)407-6830 or TTY (for the speech or hearing impaired) 711 or 1 (800) 833-6388.

Inspection / Maintenance (I / M): A federally mandated program in which motor vehicles registered in and around non-attainment areas are inspected. The vehicles with excessive emissions must be repaired.

MIL: Malfunction Indicator Lamp

MPFI: Multi-port fuel injection. Fuel and air are metered at each cylinder.

Non-attainment area: A geographic region designated by the U.S. Environmental Protection Agency as having excessive outdoor air pollution and requiring special measures to control emissions. (*See Air Pollution)*.

OBD: (*See On-board Diagnosis and On-board Diagnosis II).*

On-board Diagnosis (OBD): The first generation of On-Board Diagnostic (OBD) systems were introduced in the early 1980s to lower vehicle emissions and help automotive repair technicians in the diagnosis and repair of computerized engine controls.

On-board Diagnosis II (OBDII): The second generation of OBD is a result of improved technology. This developed a new generation called OBDII. Auto manufacturers are now required to incorporate this technology into their vehicles beginning with 1996 light duty vehicles.

Opacity: A measurement of light blockage, ranging from zero to 100%, where zero is transparent and 100% is full blockage.

Opacity meter: A device for measuring light blockage, used to gauge the concentration of fine particles in diesel exhaust smoke.

Oxygenated gasoline: Gasoline blended with an oxygen bearing additive to cause more efficient burning and lower CO emissions. Federally mandated in Spokane County only.

Pattern failures: A group of vehicles with the same engine and / or emission control devices that fail emission tests at a higher than normal rate.

PCHB: See Pollution Control Hearings Board

PCV: Positive crankcase ventilation valve. Recirculates crankcase vapors.

PM: Particulate matter.

PM_{10}: Particulate matter less than ten microns in diameter (1 micron = .001 millimeter).

Performance parts: May be installed on a vehicle if emission controls are not removed or made inoperative and the parts are EPA or CARB approved. The SEMA "green diamond" is another sign the part may be used.

Pollution Control Hearings Board (PCHB): A state panel of three administrative law judges, appointed by the Governor and confirmed by the Senate. The Board hears citizen appeals of penalties and orders issued by state and local environmental agencies. Citizens penalized by such agencies may appeal to the Board within 30 days. Its rulings may be appealed to Superior Court.

PPM: Parts per million.

Preconditioning: Steps recommended or required prior to testing a vehicle's emissions, to avoid a pattern failure, damage to the vehicle, or a hazardous condition.

R12: A refrigerant used in automotive air conditioning systems, containing CFCs, which harms the ozone layer. By federal law, all technicians who service or repair automotive air conditioners must have EPA approved certification, use EPA approved equipment to recover CFCs, and keep record. CFCs may not be vented into the air. (*See Chlorofluorocarbons, R134a.)*

R134a: A refrigerant used in automotive air conditioning systems on most 1993 and newer models. Less damaging to the ozone layer than R12. Not a drop-in replacement for R12; R12 based systems may require modifications before R134a can be used in them. Technicians who service or repair automotive air conditioners must have EPA approved certification, use EPA approved equipment to recover refrigerant, and keep proper records. R 134a must be recovered and may not be vented into the air.

RCW: Revised Code of Washington. The state laws, arranged by subject.

Recall: An after sale repair campaign conducted by an auto maker in which vehicles may be brought to a dealer for free repair of a specific problem.

Reformulated gasoline: Specially refined and blended gasoline mandated for use in sever non-attainment area**.** There are no reformulated gasoline programs in the Pacific Northwest.

Regulations: (*See 173-421 WAC and 173-422 WAC).*

SAE: Society of Automotive Engineers.

SEMA: Specialty Equipment Marketing Association.

Sensor: Devices that collect information on various engine operating conditions.

Smog: (*See Air pollution.)*

Snap-idle: A diesel emission test procedure.

Standards, gasoline vehicle emissions: (*See Chapter 9).*

Standards, diesel vehicle emissions: (*See Chapter 9).*

Stoichiometric: The ideal air / fuel ratio. 14.7:1 by weight, in which all the oxygen is consumed in the burning of all the fuel.

TAC: Thermostatic air cleaner. Adjusts intake air temperature before it comes to the fuel intake system.

Tampering: The removal, alteration, or disabling of an emission control device or system, or making an adjustment outside the manufacturer's specifications. This includes replacing the engine with one from another vehicle manufacturer or one other than an original configuration. Tampering is a violation of both state and federal laws.

TBI: Throttle body fuel injection. Fuel and air are centrally metered.

Test station locations, hours, fees: (*See Appendix 5).*

Test station equipment and calibration: (*See Chapter 6).*

TRIP: Key on, engine running, key off cycle that meets specific criteria.

Vehicle change of registration: (*See Chapter 7).*

Vehicle Emission Test Report: A document showing the results of an inspection at an Emission Check station. Given to the driver after each test. Also called VIR, vehicle inspection report, test report, test station printout. Contains a section that must be filled out and signed by an Authorized Emission Specialist as part of the waiver process.

Vehicle Identification number (VIN): A number and letter code unique to each individual vehicle. Stamped on a steel plate on the driver's side of the dashboard on most vehicles, on the door column or door on older models. Contains the serial number and information on vehicle class, engine size and type, etc.

VIR: Vehicle Inspection Report, Vehicle Emission Test Report.

WAC: Washington Administrative Code. Regulations adopted by state department to carry out state laws.

Waiver: (*See Certificate of Acceptance Chapter 3).*

Warm up drive: A ten-minute drive at 55 miles per hour on the highway or freeway, needed to bring the engine and catalytic converter to proper temperatures for Emission Check.

Warranty, emission: Federal mandated performance and defect coverage for new vehicles, starting with 1995 models the emissions warranty is two years / 24,000 miles, (whichever comes first). The major emission components such as the computer and catalytic converter are covered for eight years / 80,000 miles.

WSADA: Washington State Automobile Dealers Association.

Appendix 2: Chapter 70.120 Revised Code of Washington (RCW) Motor Vehicle Emission Control

(1991 Laws)
RCW Sections

NOTES:

Environmental certification programs – Fees – Rules – Liability: RCW 43.21A.175.

RCW 70.120.010
Definitions.

Unless the context clearly requires otherwise, the definitions in this section apply throughout this chapter.

(1) "Department" means the department of ecology.

(2) "Director" means the director of the department of ecology.

(3) "Fleet" means a group of fifteen or more motor vehicles registered in the same name and whose owner has been assigned a fleet identifier code by the department of licensing.

(4) "Motor Vehicle" means any self-propelled vehicle required to be licensed pursuant to Chapter 46.16 RCW.

(5) Motor vehicle dealer" means a motor vehicle dealer, as defined in RCW 46.70.011, that is licensed pursuant to chapter 46.70 RCW.

(6) "Person" means an individual, firm, public or private corporation, association, partnership, political subdivision of the state, municipality, or governmental agency.

(7) The terms "air Contaminant," "air pollution," "air quality standard," "ambient air," "emission," and "emission standard" have the meanings given them in RCW 70.94.030).

[1991 c 199 § 201; 1979 ex.s. c 163 § 1.]

NOTES:

Finding – 1991 c 199: See note following RCW 70.94.011.

Effective dates – Severability – Captions not law – 1991 c 199: See RCW 70.94.904 through 70.94.906.

Severability – 1979 ex.s. c 163: "If any provision of this act or its application to any person or circumstance is held invalid, the remainder of the act or the application of the provision to other persons or circumstances is not affected." [1979 ex.s. c 163 § 19.]

RCW 70.120.020
Programs.

(1) The department shall conduct a public educational program regarding the health effects of air pollution emitted by motor vehicles; the purpose, operation, and effect of emission control devices and systems; and the effect that proper maintenance of motor vehicle engines has on fuel economy and air pollution emission and a public notification program identifying the geographic areas of the state that are designated as being noncompliance areas and emission contributing areas and describing the requirements imposed under this chapter for those areas.

(2)(a) The department shall grant certificates of instruction to persons who successfully complete a course of study, under general requirements established by the director, in the maintenance of motor vehicle engines, the use of engine and exhaust analysis equipment, and the repair and maintenance of emission control devices. The director may establish and implement procedures for granting certification to persons who successfully complete other training programs or who have received certification from public and private organizations which meet the requirements established in this subsection, including programs on clean fuel technology and maintenance.

(b) The department shall make available to the public a list of those persons who have received certifications of instruction under subsection (2)(a) of this section.

[1991 c 199 § 202; 1989 c 240 § 5; 1979 ex.s c 163 § 2.]

NOTES:

Intent – 1991 c 199: "(1) It is the intent of the legislature that the state takes advantage of the best emission control systems available on new motor vehicles. The department shall conduct a study to determine if requiring new vehicles sold in the state to meet California vehicle emission standards will provide a significant benefit to attainment of ambient air quality standards in this state. The department shall report the findings of its study and its recommendations to the appropriate standing committee of the legislature. The department shall not adopt the California vehicle emission standards unless authorized by the legislature. (2) In the event that California vehicle emission standards are adopted, the department shall not include a program for in-use testing and recall of vehicles required to meet California emission standards." [1991 c 199 § 229.]

Finding – 1991 c 199: See note following RCW 70.94.011.

Effective dates -- Severability – Captions not law – 1991 c 199: See RCW 70.94.904 through 70.94.906.

Severability – 1979 ex.s. c **163:** See note following RCW 70.120.010.

RCW 70.120.070
Vehicle inspections -- Failed -- Certificate of acceptance

(1) Any person:

(a) Whose motor vehicle is tested pursuant to this chapter and fails to comply with the emission standards established for the vehicle; and

(b) Who, following such a test, expends more than one hundred dollars on a 1980 or earlier model year motor vehicle or expends more than one hundred fifty dollars on a 1981 or later model year motor vehicle for repairs solely devoted to meeting the emission standards and that are performed by a certified emission specialist authorized by RCW 70.120.020 (2)(a); and

(c) Whose vehicle fails a retest, may be issued a certificate of acceptance if (i) the vehicle has been in use for more than five years or fifty thousand miles, and (ii) any component of the vehicle installed by the manufacturer for the purpose of reducing emission, or its appropriate replacement, is installed and operative

To receive the certificate, the person must document compliance with (b) and (c) of this subsection to the satisfaction of the department.

Should any provision of (b) of this subsection be disapproved by the administrator of the United States environmental protection agency, all vehicles shall be required to expend at least four hundred fifty dollars to quality for a certificate of acceptance.

(2) Person who fails the initial tests shall be provided with:

(a) Information regarding the availability of federal warranties and certified emission specialists;

(b) Information on the availability and procedure for acquiring license trip-permits;

(c) Information on the availability and procedure for receiving a certificate of acceptance; and;

(d) The local phone number of the department's local vehicle specialist.

[1998 c 342 § 2; 1991 c 199 § 203; 1989 c 240 § 6; 1980 c 176 § 4; 1979 ex.s. c 163 § 7.]

NOTES:

Finding – 1991 c 199: See note following RCW 70.94.011.

Effective dates – Severability – Captions not law – 1991 c 199: See RCW 70.94.904 through 70.94.906.

Severability – 1979 ex.s. **c 163:** See note following RCW 70.120.010.

RCW 70.120.080
Vehicle inspections – Fleets.

The director may authorize an owner or lessee of a fleet of motor vehicles, or the owner's or lessee's agent, to inspect the vehicles in the fleet and issue certificates of compliance for the vehicles in the fleet if the director determines that: (1) The director's inspection procedures will be complied with; and (2) Certificates will be issued only to vehicles in the fleet that meet emission and equipment standards adopted under RCW 70.120.150 and only when appropriate.

In addition, the director may authorize an owner or lessee of one or more diesel motor vehicles with a gross vehicle weight rating in excess of eight thousand five hundred pounds, or the owner's or lessee's agent, to inspect the vehicles and issue certificates of compliance for the vehicles. The inspections shall be conducted in compliance with inspection procedures adopted by the department and certificates of compliance shall only be issued to vehicles that meet emission and equipment standards adopted under RCW 70.120.150.

The director shall establish by rule the fee for fleet or diesel inspections provided for in this section. The fee shall be set at an amount necessary to offset the department's cost to administer the fleet and diesel inspection program authorized by this section.

Owners, leaseholders, or their agents conducting inspection under this section shall pay only the fee established in this section and not be subject to fees under RCW 70.120.170(4).

[1991 c 199 § 205; 1979 ex.s. c 163 § 8.]

NOTES:

Finding – 1991 c 199: See note following RCW 70.94.011.

Effective dates – Severability – Captions not law – 1991 c 199: See RCW 70.94.904 through 70.94.906.

Severability – 1979 ex.s. c 163: See note following RCW 70.120.010.

RCW 70.120.100
Vehicle inspections -- Complaints.

The department shall investigate complaints received regarding the operation of emission testing stations and shall require corrections or modifications in those operations when deemed necessary.

The department shall also review complaints received regarding the maintenance or repairs secured by owners of motor vehicles for the purpose of complying with the requirements of this chapter. When possible, the department shall assist such owners in determining the merits of the complaints.

The department shall keep a copy of all complaints received, and on request, make copies available to the public. This is not intended to require disclosure of any information that is exempt from public disclosure under chapter 42.17 RCW.

[1998 c 342 § 3; 1979 ex.s. c 163 § 10.]

NOTES:

Severability – 1979 ex.s. c 163: See note following RCW 70.120.010.

RCW 70.120.120
Rules.

The director shall adopt rules implementing and enforcing this chapter in accordance with chapter 34.05 RCW. The department shall take into account when considering proposed modifications of emission contributing boundaries, as provided for in RCW 70.120.150(6), alternative transportation control and motor vehicle emission reduction measures that are required by local municipal corporations for the purpose of satisfying emission guidelines.

[1991 c 199 § 206; 1989 c 240 § 8; 1979 ex.s. c 163 § 13.]

NOTES:

Finding – 1991 c 199: See note following RCW 70.94.011.

Effective dates -- Severability – Captions not law – 1991 c 199: See RCW 70.94.904 through 70.94.906.

Severability – 1979 ex.s. c 163: See note following RCW 70.120.010.

RCW 70.120.130
Authority.

The authority granted by this chapter to the director and the department for controlling vehicle emissions is supplementary to the department's authority to control air pollution pursuant to chapter 70.94 RCW.

[1979 ex.s. c 163 § 14.]

NOTES:

Severability – 1979 ex.s. c 163: See note following RCW 70.120.010.

RCW 70.120.150
Vehicle emission and equipment standards -- Designation of noncompliance areas and emission contributing areas.

The director*:*

(1) Shall adopt motor vehicle emission and equipment standards to: Ensure that no less than seventy percent of the vehicles tested comply with the standards on the first inspection conducted, meet federal clean air act requirements, and protect human health and the environment.

(2) Shall adopt rules implementing the smoke opacity testing requirements for diesel vehicles that ensure that such test is objective and repeatable and that properly maintained engines that otherwise would meet the applicable federal emission standards, as measured by the new engine certification test, would not fail the smoke opacity test.

(3) Shall designate a geographic area as being a "noncompliance area" for motor vehicle emissions if (a) the department's analysis of emission and ambient air quality data, covering a period of no less than one year, indicates that the standard has or will probably be exceeded, and (b) the department determines that the primary source of the air contaminant is motor vehicle emissions

(4) Shall reevaluate noncompliance areas if the United States environmental protection agency modifies the relevant air quality standards, and shall discontinue the program if compliance is indicated and if the department determines that the area would continue to be in compliance after the program is discontinued. The director shall notify persons residing in noncompliance areas of the reevaluation.

(5) Shall analyze information regarding the motor vehicle traffic in a noncompliance area to determine the smallest land area within whose boundaries are present registered motor vehicles that contribute significantly to the violation of motor vehicle-related air quality standards in the noncompliance area. The director shall declare the area to be a "emission contributing area." An emission contributing area established for a carbon monoxide or oxides of nitrogen noncompliance area must contain the noncompliance area within its boundaries. An emission contributing area established for an ozone noncompliance area located in this state need not contain the ozone noncompliance area within its boundaries if it can be proven that vehicles registered in the area contribute significantly to violations of the ozone air quality standard in the noncompliance area. An emission contributing area may be established in this state for violations of federal air quality standards for ozone in an adjacent state if (a) the United States environmental protection agency designates an area to be a "non-attainment area for ozone" under the provisions of the federal Clean Air Act (42 U.S.C. 7401 et. seq.), and (b) it can be proven that vehicles registered in this state contribute significantly to the violation of the federal air quality standards for ozone in the adjacent state's non-attainment area.

(6) Shall, after consultation with the appropriate local government entities, designate areas as being noncompliance areas or emission contributing areas, and shall establish the boundaries of such areas by rule. The director may also modify boundaries. In establishing the external boundaries of an emission contributing area, the director shall use the boundaries established for ZIP code service areas by the United States postal service.

(7) May make grants to units of government in support of planning efforts to reduce motor vehicle emissions.

[1991 c 199 § 207; 1989 c 240 § 2.]

NOTES:

Finding – 1991 c 199: See note following RCW 70.94.011.

Effective dates – Severability – Captions not law – 1991 c 199: See RCW 70.94.904 through 70.94.906.

RCW 70.120.160
Noncompliance areas -- Annual review.

(1) The director shall review annually the air quality and forecasted air quality of each area in the state designated as a noncompliance area for motor vehicle emissions.

(2) An area shall no longer be designated as a noncompliance area if the director determines that:

(a) Air quality standards for contaminants derived from motor vehicle emissions are no longer being violated in the noncompliance area; and

(b) The standards would not be violated if the emission inspection system in the emission contributing area was discontinued and the requirements of RCW 46.16.015 no longer applied. [1989 c 240 § 3.]

RCW 70.120.170
Motor vehicle emission inspections – Fees – Certificate of compliance – State and local agency vehicles.

(1) The department shall administer a system for emission inspections of all motor vehicles, except those described in RCW 46.16.015(2), that are registered within the boundaries of each emission contributing area. Under such system a motor vehicle shall be inspected biennially except where an annual program would be required to meet federal law and prevent federal sanctions. In addition, motor vehicles shall be inspected at each change of registered owner of a licensed vehicle as provided under RCW 46.16.015.

(2) The director shall:

(a) Adopt procedures for conducting emission inspections of motor vehicles. The inspections may include idle and high revolution per minute emission tests. The emission test for diesel vehicles shall consist solely of a smoke opacity test.

(b) Adopt criteria for calibrating emission testing equipment. Electronic equipment used to test for emissions standards provided for in this chapter shall be properly calibrated. The department shall examine frequently the calibration of the emission testing equipment used at the stations.

(c) Authorized, through contracts, the establishment and operation of inspection stations for conducting vehicle emission inspections authorized in this chapter. No person contracted to inspect motor vehicles may perform for compensation repairs on any vehicles. No public body may establish or operate contracted inspection stations. Any contracts must be let in accordance with the procedures established for competitive bids in chapter 43.19 RCW.

(3) Subsection (2)(c) of this section does not apply to volunteer motor vehicle inspections under RCW 70.120.020(1) if the inspections are conducted for the following purposes:

(a) Auditing;

(b) Contractor evaluation;

(c) Collection of data for establishing calibration and performance standards; or

(d) Public information and education.

(4) (a) The director shall establish by rule the fee to be charged for emission inspections. The inspection fee shall be a standard fee applicable state-wide or throughout an emission contributing area and shall be no greater than eighteen dollars. Surplus moneys collected from fees over the amount due the contractor shall be paid to the state and deposited in the general fund. Fees shall be set at the minimum whole dollar amount required to (i) compensate the contractor or inspection facility owner, and (ii) offset the general fund appropriation to the department to cover the administrative costs of the motor vehicle emission inspection program.

(b) Before each inspection, a person whose motor vehicle is to be inspected shall pay to the inspection station the fee established under this section. The person whose motor vehicle is inspected shall receive the results of the inspection. If the inspected vehicle complies with the standards established by the director, the person shall receive a dated certificate of compliance. If the inspected vehicle does not comply with those standards, one reinspection of the vehicle shall be afforded without charge

(5) All units of local government and agencies of the state with motor vehicles garaged or regularly operated in an emission contributing area shall test the emissions of those vehicles annually to ensure that the vehicle's emissions comply with the emission standards established by the director. All state agencies outside of emission contributing areas with more than twenty motor vehicles housed at a single facility or contiguous facilities shall test the emissions of those vehicles annually to ensure that the vehicles' emissions comply with standards established by the director. A report of the results of the tests shall be submitted to the department.

[1998 c 342 § 4; 1991 c 199 § 208; 1989 c 240 § 4.]

NOTES:

Finding – 1991 c 199: See note following RCW 70.94.011.

Effective dates – Severability – Captions not law – 1991 c 199: See RCW 70.94.904 through 70.94.906.

RCW 70.120.190
Used vehicles

(1) Motor vehicle dealers selling a used vehicle not under a new vehicle warranty shall include a notice in each vehicle purchase order form that reads as follows: "The owner of a vehicle may be required to spend up to (a dollar amount established under RCW 70.120.070) for repairs if the vehicle does not meet the vehicle emission standards under this chapter. Unless expressly warranted by the motor vehicle dealer, the dealer is not warranting that this vehicle will pass any emission tests required by federal or state law."

(2) The signature of the purchaser on the notice required under subsection (1) of this section shall constitute a valid disclaimer of any implied warranty by the dealer as to a vehicle's compliance with any emission standards.

(3) The disclosure requirement of subsection (1) of this section applies to all motor vehicle dealers located in counties where state emission inspections are required.

[1991 c 199 § 210.]

NOTES:

Finding – 1991 c 199: See note following RCW 70.94.011.

Effective dates – Severability – Captions not law – 1991 c 199: See RCW 70.94.904 through 70.94.906.

RCW 70.120.200
Engine conformance.

Engine manufacturers shall certify that new engine conform to current exhaust emission standards of the federal environmental protection agency.

[1991 c 199 § 211.]

NOTES:

Finding – 1991 c 199: See note following RCW 70.94.011.

Effective dates – Severability – Captions not law – 1991 c 199: See RCW 70.94.904 through 70.94.906.

RCW 70.120.210
Clean-fuel performance and clean-fuel vehicle emission specifications.

By July 1, 1992, the department shall develop, in cooperation with the departments of general administration and transportation, and Washington State University, aggressive clean-fuel performance and clean-fuel vehicle emissions specifications including clean-fuel vehicle conversion equipment. To the extent possible, such specifications shall be equivalent for all fuel types. In developing such specifications the department shall consider the requirements of the clean air act and the findings of the environmental protection agency, other states, the American petroleum institute, the gas research institute, and the motor vehicles manufacturers association.

[1996 c 186 § 518; 1991 *c* 199 § 212.]

NOTES:

Findings – Intent – Part headings not law – Effective date – 1996 c 186: See notes following RCW 43.330.904.

Finding – 1991 c 199: See note following RCW 70.94.011.

Effective dates – Severability – Captions not law – 1991 c 199: See RCW 70.94.904 through 70.94.906.

Clean-fuel grants: RCW 70.94.960.

RCW 70.120.230
Scientific advisory board – Composition of board – Duties.

The department shall establish a scientific advisory board to review plans to establish or expand the geographic area where an inspection and maintenance system for motor vehicle emissions is required. The board shall consist of three to five members. All members shall have at least a master's degree in physics, chemistry, or engineering, or a closely related field. No member may be a current employee of a local air pollution control authority, the department, the United States environmental protection agency, or a company that may benefit from a review by the board.

The board shall review an inspection and maintenance plan at the request of a local air pollution control authority, the department, or by a petition of at least fifty people living within the proposed boundaries of a vehicle emission inspection and maintenance system. The entity or entities requesting a scientific review may include specific issues for the board to consider in its review. The board shall limit its review to matters of science and shall not provide advice on penalties or issues that is strictly legal in nature.

The board shall provide a complete written review to the department. If the board members are not in agreement as to the scientific merit of any issue under review, the board may include a dissenting opinion in its report to the department. The department shall immediately make copies available to the local air pollution control authority and to the public.

The department shall conduct a public hearing, within the area affected by the proposed rule, if any significant aspect of the rule is in conflict with a majority opinion of the board. The department shall include in its responsiveness summary the rationale for including a rule that is not consistent with the review of the board, including a response to the issues raised at the public hearing.

Members shall be reimbursed for travel expenses as provided in RCW 43.03.050 and 43.03.060.

[1998 c 342 § 5.]

RCW 70.120.901
Captions not law – 1989 c 240.

Section headings are used in this act do not constitute any part of law.

[1989 c 240 § 11.]

RCW 70.120.902
Effective date – 1989 *c* 240.

This act shall take effect January 1, 1990.

[1989 c 240 § 14.]

Appendix 3: Washington Administrative Code (WAC) Emission Controls and Inspections Chapter 173-421 WAC Motor vehicle emission control systems

Rev. 9/16/87

WAC 173-421-010 Purpose. This chapter promulgated under RCW 70.94.305 and 70.94.331 establishes requirements to preserve emission control equipment installed on motor vehicles.

[Statutory Authority: Chapter 70.94 RCW. 87-19-078 (Order 87-17), 173-421-010, filed 9/16/87.]

WAC173-421-020 Assumption of jurisdiction and applicability. The department finds that the prevention and control of air pollution from motor vehicles should be regulated on the state-wide basis and, hereby assumes jurisdiction over motor vehicles for the purpose of controlling air contaminant emissions from the operation of such motor vehicles.

[Statutory Authority: Chapter 70.94 RCW. 87-19-078 (Order 87-17), 173-421-020, filed 9/16/87]

WAC 173-421-030 Definitions. Unless a different meaning is clearly required by context, words and phrases used in this chapter shall have the following meanings; general terms common with other chapters of Title 173 WAC as defined in chapter 173-403 WAC, and terms specific to motor vehicle emission control systems as follows:

"Motor vehicle" means a self-powered operating vehicle or one capable of operating, designed to transport people or property, and of a type required to be licensed for operation on public highways.

[Statutory Authority: Chapter 70.94 RCW. 87-19-078 (Order 87-17), 173-421-030, filed 9/16/87.]

WAC 173-421-100 Emission control systems. A person shall not remove or render inoperable any component or change any element of design of a motor vehicle including adjustments outside the range of manufacturer's specifications that could affect the amount of air contaminants emitted from the vehicle subject to the following conditions:

1) Components of emission control systems may be disassembled and assembled for the purpose of repair and maintenance. These components or elements of design shall be restored to (proper working order when they are repaired or maintained.

(2) When components of emission control systems require replacement they may be removed and replaced with a part intended by the vehicle manufacturer as a replacement part for that specific vehicle. Under circumstances established by the United States Environmental Protection Agency and aftermarket replacement part may be used. A replaced part shall be installed and adjusted so that it is in proper working order.

[Statutory Authority: Chapter 70.94 RCW. 87-19-078 (Order 87-17), 173-421-100, filed 9/16/87.]

Appendix 4: Chapter 173-422 WAC
MOTOR VEHICLE EMISSION INSPECTION

Last Update: 6/3/02

Appendix 4: 173-422 WAC

DISPOSITIONS OF SECTIONS FORMERLY CONDIFIED IN THIS CHAPTER

173-422-080 Vehicle inspection data handling procedures. [Statutory Authority: RCW 70.120.120, 43.21A.080, 70.93.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-080, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 82-02-027 (Order DE-81-32), § 173-422-080, filed 12/31/81; 80-03-070 (Order DE 79-35), § 173-422-080, filed 2/28/80.] Repealed by 93-10-062 (Order 91-46), filed 5/3/93, effective 6/3/93. Statutory Authority: Chapter 70.120 RCW.

173-422-110 Date system requirements. [Statutory Authority: RCW 70.120.120. 82-02-027 (Order DE 81-32), § 173-422-110, filed 12/31/81; 80-03-070 (Order DE 79-35), § 173-422-110, filed 2/28/80.] Repealed by 93-10-062 (Order 91-46), filed 5/3/93, effective 6/3/93. Statutory Authority: Chapter 70.120 RCW.

173-422-140 Inspection forms and certificates. [Statutory Authority: Chapter 70.120 RCW. 93-10-062 (Order 91-46), § 173-422-140, filed 5/3/93, effective 6/3/93; 90-06-062, § 173-422-140, filed 3/6/90, effective 4/6/90. Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-140, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 82-02-027 (Order DE 81-32), § 173-422-140, filed 12/31/81; 80-03-070 (Order DE 79-35), § 173-422-140, filed 2/28/80.] Repealed by 94-05-039 (Order 93-10), filed 2/8/94, effective 3/11/94, Statutory Authority: Chapter 70.120 RCW.

173-422-150 Inspection personnel requirements. [Statutory Authority: RCW 70.120.120. 80-03-070 (Order DE 79-35), § 173-422-150, filed 2/28/80] Repealed by 93-10-062 (Order 91-46), filed 5/3/93, effective 6/3/93. Statutory Authority: Chapter 70.120 RCW.

173-422-180 Air quality standards. [Statutory Authority: RCW 70.120.120. 80-03-070 (Order DE 79-35), § 173-422-180, filed 2/28/80.] Repealed by 93-10-062 (Order 91-46, filed 5/3/93, effective 6/3/93. Statutory Authority: Chapter 70.120 RCW

WAC 173-422-010 Purpose. This chapter implements the Washington Clean Air Act, chapter 70.94 RCW, as supplemented by the motor vehicle emission inspection provisions codified as chapter 70.120 RCW.

Gasoline motor vehicles are the primary emitters of carbon monoxide and emit significant quantities of hydrocarbons and oxides of nitrogen. Diesel motor vehicles are emitters primarily of particulates, hydrocarbons, and oxides of nitrogen. Emission controls required by the federal government are designed to reduce motor vehicle related air pollution. However, the effectiveness of these controls is substantially reduced through deterioration, maladjustment and tampering. Motor vehicle emission inspection serves to identify high polluting vehicles and vehicles with tampered or missing emission controls and to reduce their emissions, when suck reduction can be accomplished at reasonable cost. These rules establish the emission standards, testing procedures, and associated activities necessary to implement a program of air pollution prevention and control resulting from motor vehicle emission inspections.

Appendix 4: 173-422 WAC

[Statutory Authority: Chapter 70.120 RCW. 93-10-062 (Order 91-46), § 173-422-010, filed 5/3/93, effective 6/3/93. Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94-331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-010, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 80-03-070 (Order DE 79-35), § 173-422-010, filed 2/28/80.

WAC 173-422-020 Definitions. Unless a different meaning is clearly indicated by context, the following definitions will apply:

(1) "Appropriate repair" means the diagnosis of the cause(s) of an emission test failure and/or the repair of one or more of these causes. An appropriate repair should reduce at least one emission test reading or diagnose and/or repair an emission problem identified by the on-board diagnostic (OBD) system.

(2) "Certificate of acceptance" means an official form, issued by someone authorized by the department, which certifies that the following conditions have been met:

(a) The vehicle failed an emission inspection; and

(b) The vehicle failed a re-inspection; and

(c) All primary emission control components installed by the vehicle manufacturer, or its appropriate replacement, are installed and operative; and

(d) The recipient has provided original receipts listing and providing the cost of each appropriate repair performed by an authorized emission specialist between the initial and last inspection/ and

(e) The total cost of the appropriate repairs must equal or exceed:

Pre-1981 vehicles	$100
1981 and newer	$150

(3) "Certificate of compliance" means an official form, issued by someone authorized by the department, which certifies that the recipient's vehicle on inspection complied with applicable emission inspection standards.

(4) "Authorized emission specialist" means an individual who has been issued a certificate of instruction by the department as authorized in RCW 70.120.020(2)(a) and has maintained the certification by meeting requirements of WAC 173-422-190(2).

(5) "Dealer" means a motor vehicle dealer, as defined in chapter 46.70 RCW as amended that is licensed pursuant to chapter 46.70 RCW.

(6) "Department" means the department of ecology.

(7) "Emission contributing area" means a land area within whose boundaries are registered motor vehicles that contribute significantly to the violation of motor vehicle related air quality standards in a noncompliance area.

(8) "Fleet" means a group of fifteen or more motor vehicles owned or leased concurrently by one owner assigned a fleet identifier code by the department of licensing.

(9) "Gross vehicle weight rating ()" means the manufacturer stated gross vehicle weight rating.

(10) "Motor vehicle" means any self-propelled vehicle required to be licensed pursuant to chapter 46.16 RCW.

(11) "Noncompliance area" means a land area within whose boundaries any air quality standard for any air contaminant from the emissions of motor vehicles will probably be exceeded.

(12) "PPM" means parts per million by volume.

(13) "Primary emission control components" means the components of the vehicle installed by the manufacturer for the purpose of reducing emissions or its replacement or modification which is acceptable to the United States Environmental Protection Agency. These components are, but are not limited to, the catalytic converter or thermal reactor, the air injection system components, the thermostatic air cleaner, the exhaust gas recirculation system components, the evaporative emission system components including the gas cap, the positive crankcase ventilation system components and the electronic control unit components that control the air / fuel mixture and/ or ignition timing including all related sensors.

The primary emission control components of a vehicle with a different engine than the engine originally installed shall be an Environmental Protection Agency certified engine / emission control combination for that vehicle or its newer model.

[Statutory Authority: RCW 70.120.120.02-12-072 (Order 02-04), § 173-422-020, filed 6/3/02, effective 7/4/02. Statutory Authority: Chapter 70.120 RCW. 95-06-068 (Order 93/35), § 173-422-020, filed 2/28/95, effective 3/31/95; 94-05-039 (Order 93-10), § 173-422-020, filed 2/8/94, effective 3/11/94; 93-10-062 (Order 91-46), § 173-422-020, filed 5/3/93, effective 6/3/93; 90-06-062, § 173-422-020, filed 3/6/90, effective 4/6/90. Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-020, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 80-03-070 (Order DE 79-35), § 173-422-020, filed 2/28/80.]

WAC 173-422-030 Vehicle Emission inspection requirement. All motor vehicles, not specifically exempt by WAC 173-422-170, which are registered or reregistered within the boundaries of an emission contributing area, as specified in WAC 173-422-050, are subject to the vehicle emission inspection requirements of this chapter. In addition, the department may require an emission inspection of a motor vehicle, except military tactical vehicles, operated for more than sixty days a year on a federal installation located within an emission contributing area, or a vehicle garaged at a location within an emission contributing area, or a vehicle which has previously passed an emission inspection but has been identified using on road testing as likely to no longer comply with the inspection standards. Neither the department of licensing, county auditors nor subagents appointed under RCW 46.01.140 may change the registered owner or may issue or renew a motor vehicle license for any vehicle registered in an emission contributing area, as that area is established under RCW 70.120.150, unless the application for issuance or renewal is: (1) Accompanied by a valid certificate of compliance issued pursuant to RCW 70.120.080 or 70.120.170 or a valid certificate of acceptance issued pursuant to RCW 70.120.070; or (2) exempted from this requirement pursuant to RCW 46.16.015(2). Certificates must have a date of validation which is within twelve months of the assigned license renewal date.

[Statutory Authority: RCW 70.120.120.02-12-072 (Order 02-04), § 173-422-030, filed 6/3/02, effective 7/4/02. Statutory Authority: Chapter 70.120 RCW.96-21-029 (Order 95-11), § 173-422-030, filed 10/9/96, effective 11/9/96; 95-06-068 (Order 93-35), § 173-422-030, filed 2/28/95, effective 3/3/1/95; 95-05-039 (Order 93-10), § 173-422-030, filed 2/8/94, effective 3/11/94; 93-10-062 (Order 91-46), § 173-422-030, filed 5/3/93, effective 6/3/93. Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-030, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW70.120.120.80-03-070 (Order DE 79-35), § 173-422-030, filed 2/28/80.]

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WAC 173-422-031 Vehicle emission inspection schedules.

(1) Vehicles defined in RCW 46.16.015(2) or WAC 173-422-170 are exempt from emission inspections. Vehicles five through twenty-five years old, other than state and local government vehicles shall be inspected every other year as described in the table below. This inspection schedule does not apply to vehicles that have already been issued a certificate of compliance or a certificate of acceptance within twelve months of the assigned license renewal date.

Year	Model Year of Vehicles Needing Inspection
2002	1978, 1980, 1982, 1984, 1986, 1988, 1990, 1992, 1994, 1997
2003	1979, 1981, 1983, 1985, 1987, 1989, 1991, 1993, 1995, 1996, 1998
2004	1980, 1982, 1984, 1986, 1988, 1990, 1992, 1994, 1997, 1999
2005	1981, 1983, 1985, 1987, 1989, 1991, 1993, 1995, 1996, 1998, 2000
2006	1982, 1984, 1986, 1988, 1990, 1992, 1994, 1997, 1999, 2001
2007	1983, 1985, 1987, 1989, 1991, 1993, 1995, 1996, 1998, 2000, 2002
2008	1984, 1986, 1988, 1990, 1992, 1994, 1997, 1999, 2001, 2003
2009	1985, 1987, 1989, 1991, 1993, 1995, 1996, 1998, 2000, 2002, 2004
2010	1986, 1988, 1990, 1992, 1994, 1997, 1999, 2001, 2003, 2005
2011	1987, 1989, 1991, 1993, 1995, 1996, 1998, 2000, 2002, 2004, 2006
2012	1988, 1990, 1992, 1994, 1997, 1999, 2001, 2003, 2005, 2007

(2) State and local government vehicles five through twenty-five years old shall be inspected yearly as described in the table below.

Year	Model Year of Vehicles Needing Inspection
2002	1977 through 1997
2003	1978 through 1998
2004	1979 through 1999
2005	1980 through 2000
2006	1981 through 2001
2007	1982 through 2002
2008	1983 through 2003

Year	Model Year of Vehicles Needing Inspection (cont.)
2009	1984 through 2004
2010	1985 through 2005
2011	1986 through 2006
2012	1987 through 2007

[Statutory Authority: RCW 70.120.120.02-12-072 (Order 02-04), § 173-422-031, filed 6/3/02, effective 7/4/02; 00-22-120 (Order 00-15), § 173-422-031, filed 11/1/00, effective 12/2/00.]

WAC 173-422-035 Registration requirements. (1) Persons residing in emission contributing areas as defined under WAC 173-422-050 shall register their motor vehicles within that area.

(2) Any person who violates this section shall reregister their motor vehicle within the emission contributing area, obtain a certificate of compliance or acceptance within thirty days, and is subject to civil penalty not to exceed two hundred fifty dollars for each violation.

(3) Any civil penalty imposed by the department hereunder shall be appealed to the pollution control hearings board as provided for in chapter 43.21B RCW.

[Statutory Authority: Chapter 70.120 TCW. 93-10-068 (Order 93-35), § 173-422-035, filed 2/28/95, effective 3/31/95; 93-10-062 (Order 91-46), § 173-422-035, filed 5/3/93, effective 6/3/93; 90-06-062, § 173-422-035, filed 3/6/90, effective 4/6/90.]

WAC 173-422-040 Noncompliance areas. The following areas are designated non-compliance areas for the air contaminants specified: Carbon monoxide

(1) The city of Seattle.
(2) The city of Bellevue.
(3) The city of Spokane.
(4) The city of Tacoma.
(5) The city of Vancouver.
(6) The city of Everett.

[Statutory Authority: Chapter 70.120 RCW. 93-10-062 (Order 91-46), § 173-422-040, filed 5/3/93, effective 6/3/93; 90-06-062, § 173-422-040, filed 3/6/90, effective 4/6/90. Statutory Authority: RCW 70.120.120. 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-040, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 82-02-027 (Order DE 81-32), § 173-422-040, filed 12/31/81; 80-03-070 (Order DE 79-35), § 173-422-040, filed 2/28/80.]

WAC 173-422-050 Emission Contributing areas. Emission contributing areas within which the motor vehicle emission inspection program applies are designated by the following United States Postal Service ZIP codes as of September 1, 1994, set for the below:

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(1) Puget Sound Region

98001	98036	98083
98002	98037	98092
98003	98038	98093
98004	98039	98101 through 98199
98005	98040	inclusive except 98110
98006	98041	98201 through 98208
98008	98043	98270
98009	98046	98271
98011	98047	98275
98012	98052	98290
98015	98053	98291
98020	98054	98327
98021	98055	98332
98023	98056	98335
98025	98057	98338
98026	98058	98344
98027	98059	98352
98028	98062	98354
98031	98063	98371 through 98374
98032	98064	98387
98033	98071	98388
98034	98072	98390
98035	98073	98401 through 98499

(2) Spokane Region

99001	99016	99025	99201through 99299
99005	99019	99027	
99014	99021	99037	

(3) Vancouver Region

98604 except east of N.E. 50th Street	98642
98606	98660 through 98668
98607	98671 except Skamania County
98629 except east of N.E. 50th Avenue	98682 through 98686

[Statutory Authority: Chapter 70.120. 96-21-029 (Order 95-11), § 173-422-050, filed 10/9/96, effective 11/9/96; 95-06-068 (Order 93-35), § 173-422-050, filed 2/28/95, effective 3/31/95; 94-05-039 (Order 93-10), § 173-422-050, filed 2/8/94, effective 3/11/94; 93-10-062 (Order 91-46), § 173-422-050, filed 5/3/93, effective 6/3/93; 84-09087 (Order DE 84-7), § 173-422-050, filed 4/18/84. Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-050, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 82-02-027 (Order DE 81-32), § 173-422-050, filed 12/31/81; 80-03-070 (Order DE 79-35), § 173-422-050, filed 2/28/80.]

WAC 173-422-060 Gasoline vehicle emission standards. Gasoline motor vehicles subject to this chapter shall:

(1) When tested using the exhaust emission testing procedures described in (II) Two Speed Idle Test of Appendix B Test Procedures of Subpart S-Inspection / Maintenance Program Requirements of Part 51 of Chapter 1, Title 40 of the Code of Federal Regulations adopted November 1, 1992, meet the applicable exhaust emission standards from the following table during both the idle and higher speed mode.

Two Speed Idle test Exhaust Emission Standards

Model Year	**CO (%)***	**HC (ppm)***
80 and earlier	3.0	600
81 and newer (0-8500)	1.2	220
81 and newer (Greater than 8500)	3.0	400

* Carbon monoxide (CO) and hydrocarbons (HC), measured as a percent (%) or parts per million (ppm) of the exhaust volume.

(2) When tested using the acceleration simulation mode (ASM) procedure specified in WAC 173-422-070 meet the following standards during that mode and the applicable standard from WAC 173-422-060(1) during the idle mode.

ASM Mode Exhaust Emission Standards

Model Year Test Weight (lbs.)	CO (%)*	HC (ppm)
1980 and earlier model year cars and trucks (0-8500 lbs.)		
1750	4.2	400
1875	4.0	380
2000	3.8	350
2125	3.6	340
2250	3.4	320
2375	3.2	300
2500	3.0	290
2625	2.9	270
1980 and earlier model year cars and trucks (0-8500 lbs.)		
2750	2.8	260
2875	2.7	250
3000	2.6	240
3125	2.5	230
3250	2.4	220
3375	2.3	220
3500	2.2	210
3625	2.1	200
Cars 3750 & greater	2.1	200
Trucks 3750 & greater	2.5	300
1981 and later model year cars and trucks (0-8500 lbs.)		
1750	1.8	250
1875	1.7	240
2000	1.6	220
2125	1.5	210
2250	1.5	200
2375	1.4	190

2500	1.3	180
2625	1.3	180
2750	1.2	170
2875	1.2	160
3000	1.1	160
3125	1.1	150
3250	1.0	150
3375	1.0	150
3500	1.0	150
3625	1.0	150
Cars 3750 & greater	1.0	150
Trucks 3750 & greater	1.5	200

* Carbon monoxide (CO) and hydrocarbons (HC), measured as a percentage (%) or parts per million (ppm) of the exhaust volume.

(3) The gasoline filler cap must not leak more than 60 cubic centimeters per minute at a pressure 30 inches of water.

(4) Standardized on-board diagnostic (OBD) systems (also known as OBDII) were required by Environmental Protection Agency starting with 1996 model gasoline vehicle cars and light trucks. If a 1996 or newer model vehicle is equipped with an Environmental Protection Agency certified on-board diagnostic (OBD) system, the information stored in the on-board computer must indicate that all emission-related functional checks have been completed except for 1996 to 2000 model year vehicles that can have up to two readiness monitors not set to ready, or 2001 or newer model year vehicles that have one readiness monitor not set to ready, and no malfunctions detected that would command the malfunction indicator light to be illuminated.

[Statutory Authority: RCW 70.120.120. 02-12-072 (Order 02-04), § 173-422-060, filed 6/3/02, effective 7/4/02. Statutory Authority: Chapter 70.120 RCW. 96-21-029 (Order 95-11), § 173-422-060, filed 10/9/96, effective 11/9/96; 95-06-068 (Order 93-35), § 173-422-060, filed 2/28/95, effective 3/31/95 93-10-062 (Order 91-46), § 173-422-060, filed 5/3/93, effective 6/3/93; 90-06-062, § 173-422-060, filed 3/6/90, effective 4/6/90. Statutory Authority: RCW 70.120.120. 43-21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-060, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 82-02-027 (Order DE 81-32), § 173-422-060, filed 12/31/81; 80-03-070 (Order DE 79-35), § 173-422-060, filed 2/28/80.]

WAC 173-422-065 Diesel vehicle exhaust emission standards.

(1) Diesel motor vehicles subject to this chapter shall meet the following opacity standards when using the snap-acceleration test procedures specified in WAC 173-422-075.

Model Year	Opacity (%)
1991 and earlier	55
1992 and later	40

(2) When using the Acceleration Simulation Mode (ASM) test procedures specified in WAC 173-422-070 adapted for the testing of diesel cars or light trucks (0-8500 pounds gross vehicle weight rating), these vehicles shall meet a 20% opacity standard.

[Statutory Authority: RCW 70.120.120. 02-12-072 (Order 02-04), § 173-422-065, filed 6/3/02, effective 7/4/02. Statutory Authority: Chapter 70.120 RCW. 95-06-068 (Order 93-35), § 173-422-065, filed 2/28/95, effective 3/31/95; 93-10-062 (Order 91-46), § 173-422-065, filed 5/3/93, effective 6/3/93.]

WAC 173-422-070 Gasoline vehicle exhaust emission testing procedures. All persons certified by, or under contract to, the department to conduct motor vehicle emission inspections shall use the exhaust emission testing procedures described in (II) Two Speed Idle Test of Appendix B-Test Procedures of Subpart S-Inspection / Maintenance Program Requirements of Part 51 of chapter 1, Title 40 of the Code of Federal Regulations adopted November 1, 1992, except that the department may require that the following Acceleration Simulation Mode (ASM) test procedure replace the 2500 rpm mode of the Two Speed Idle Test. Equivalent procedures may be approved by the department.

Variations to the procedures specified may be established by the department for all or certain vehicles. Vehicles, not repaired as required by an emission recall for which owner notification was attempted after January 1, 1995, shall not be inspected until compliance with the recall is established.
Acceleration Simulation Mode (ASM):

1. Dynamometer Load: Set dynamometer horsepower load equal to [Vehicle Weight (lbs.) + 300] /300. An Environmental Protection Agency specified loading may also be used.
2. Vehicle Gear Selection: Vehicles with automatic transmissions use Drive (not Overdrive), vehicles with manual transmissions use second gear. Shift to the next higher gear if the engine speed exceeds 2500 revolutions per minute.
3. Vehicle Speed: Set vehicle speed at 25 miles per hour (mph) 1.5 $\pm$ mph.
4. Pass or fail Determinations: Once the vehicle has been operating at 25 mph for 15 seconds, begin measuring exhaust HC, CO, and CO_2, each second. The reading for pass or fail determinations is the running average of five measurements. When a final pass or fail determination is made, this mode will be stopped and the final readings recorded.
5. Fast Pass: Once HC and CO readings are equal to or less than the HC and CO standards and are within 20 ppm HC and 0.20% CO of each other.
6. Fast Fail: The vehicle will fail after 15 or more seconds of measurements when the HC reading exceeds 1800 ppm, or the CO reading exceeds 9.0 percent.
7. Full Term Pass / Fail: The vehicle will pass or fail the ASM mode after 90 seconds of measurements unless emission readings are declining at a rate that indicates that a failing vehicle will pass within the next 30 seconds. Then the failing vehicle will receive up to an additional 30 seconds of measurements before the final pass ; fail determination is made.

[Statutory Authority: RCW 70.120.120. 02-12-072 (Order 02-04), § 173-422-070, files 6/3/02, effective 7/4/02. Statutory Authority: Chapter 70.120 RCW. 96-21-029 (Order 91-11), § 173-422-070, filed 10/9/96, effective11/9/96; 95-06-068 (Order 93-35), § 173-422-070, filed 2/28/95; 94-05-039 (Order 93-10), § 173-422-070, filed 2/8/94, effective 3/11/94; 92-10-062 (Order 91-46), § 173-422-070, filed 5/3/93, effective 6/3/93; 90-06-062, § 173-422-070, filed 3/6/90, effective 4/6/90. Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-070, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 82-02-027 (Order DE 81-32), § 173-422-070, filed 12/31/81; 80-03-070 (Order DE 79-35), § 173-422-070, filed 2/28/80.]

NOTES:

Reviser's note: The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency.

WAC 173-422-075 Diesel vehicle inspection procedure. Diesel vehicles shall be tested using the following snap-acceleration test procedure unless the department requires the Acceleration Simulation Mode (ASM) test procedure specified in WAC 173-422-070 adapted for the testing of diesel cars or light trucks (0-8500 pounds gross vehicle weight rating) are sued in lieu of the snap acceleration test procedure.

Prior to beginning the test verify the engine is within its normal operating temperature range, all vehicle accessories including air conditioning are off, the parking brake and an engine brake or retarder is off, the transmission is in neutral (and clutch released if manual transmission).

(1) The vehicle shall receive at least three preliminary snap-acceleration test cycles until consistent engine operation is achieved. The snap-acceleration test cycle consists of moving the accelerator pedal from normal idle as rapidly as possible to the full power position, then fully releasing the throttle so the engine returns to idle.

(2) Then perform additional snap-acceleration test cycles while measuring the smoke opacity with an opacity meter which meets the requirements specified in WAC 173-422-095. The engine must be allowed to remain at idle for at least ten seconds between snap-acceleration test cycles. If a subsequent snap-acceleration cycle is not begun within 45 seconds, the entire sequence of snap-acceleration test cycles must be restarted. The three preliminary snap-acceleration test cycles in (1) need not be repeated.

(3) Record peak opacity readings from each snap-acceleration test cycle up to nine times if necessary to obtain a peak opacity reading and two consecutive peak readings that are equal to or less then the standard established in WAC 173-422-065.

If peak opacity reading and two consecutive peak readings that are equal to or less than the standard established in WAC173-422-065 are not obtained, the vehicle fails the test.

(4) Steps 2 and 3 are repeated for any additional exhaust pipes.

[Statutory Authority: RCW 70.120.120. 02-12-072 (Order 02-04), § 173-422-075, filed 6/3/02, effective 7/4/02. Statutory Authority: Chapter 70.120 RCW.94-05-039 (Order 93-10), § 173-422-075, filed 2/8/94, effective 3/11/94, 93-10-062 (Order 91-46), § 173-422-075, filed 5/3/93, effective 6/3/93]

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WAC 173-422-090 Exhaust gas analyzer specifications. Only exhaust gas analyzers meeting the specifications contained in (1) Steady state Exhaust Analysis System of Appendix D - Steady state Short Test Equipment of Subpart S-Inspection/Maintenance Program Requirements of Part 51 of Chapter 1, Title 40 of the Code of Federal Regulations adopted November 1, 1992, At the time of certification testing may be sued for certification testing, unless equivalent specifications have been approved by the department.

[Statutory Authority: Chapter 70.120 RCW. 95-06-068 (Order 93-35), § 173-422-090, filed 2/28/95, effective 3/31/95; 93-10-062 (Order 91-46), § 173-422-090, filed 5/3/93, effective 6/3/93; 90-06-062, § 173-422-090, filed 3/6/90, effective 4/6/90. Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-090, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 82-02-027 (Order DE 81-32), § 173-422-090, filed 12/31/81; 80-03-070 (Order DE 79-35), § 173-422-090, filed 2/28/80.]

WAC 173-422-095 Exhaust opacity testing equipment. The exhaust opacity measurement shall be conducted using an opacity meter approved by the department.

The opacity meter shall:

(1) Automatically calibrates itself before each test.
(2) Provide for continuous measurement of exhaust opacity unaffected by rain or wind.

[Statutory Authority: Chapter 70.120 RCW 94-05-039 (Order 93-10), § 173-422-095, filed 2/8/94, effective 3/11/94; 93-10-062 (Order 91-46), § 173-422-095, filed 5/3/93, effective 6/3/93.]

WAC 173-422-100 Testing equipment maintenance and calibration.

(1) Unless alternative procedures have been approved or required by the department all equipment used in the inspection shall be calibrated and maintained according to the manufacturer's specifications and recommendations. Complete logs as approved by the department shall be kept for maintenance, repair, and calibration.

(2) The procedures for equipment maintenance and calibration procedures described in (I) Steady state Test Equipment of Appendix A-Calibrations, Adjustments and Quality Control of Subpart S-Inspection/Maintenance Program Requirements of Part 51 of chapter 1, Title 40 of the Code of Federal Regulations adopted November 1, 1992, shall be followed by all testing facilities unless equivalent procedures have been approved by the department.

[Statutory Authority: Chapter 70.120 RCW. 95-06-068 (Order 93-35),§ 173-422-100, filed 2/28/95, effective 3/31/95; 93-10-062 (Order 91-46), § 173-422-100, filed 5/3/93, effective 6/3/93; 90-06-062, § 173-422-100, filed 3/6/90, effective 4/6/90. Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-100, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120.82-02-027 (Order DE 81-32), § 173-422-100, filed 12/31/81; 80-03-070 (Order DE 79-35), § 173-422-100, filed 2/28/80]

WAC 173-422-120 Quality assurance. The department, or its designee, may monitor the operation of each authorized emission inspection/certification facility with unidentified or unannounced and unscheduled inspections to check the calibration and maintenance of the exhaust analyzers, test procedures, and records.

The department (or its designee) may immediately require the suspension of vehicle inspections/certifications in all or part by the inspection/certification facility if violations of this chapter are found during an audit of the inspection facility.

[Statutory Authority: Chapter 70.120 RCW. 95.06.068 (Order 93-35), § 173-422-120, filed 2/28/95, effective 3/31/95; 93-10-062 (Order 91-46), § 173-422-120, filed 5/3/93, effective 6/3/93. Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83- 23-115 (Order DE 83-31), § 173-422-120, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 80-03-070 (Order DE 79.35), § 173-422-120, filed 2/28/80.]

WAC 173-422-130 Inspection fees. At an inspection facility operated under contract to the state, the fee for the first emission inspection on each vehicle applicable to a vehicle license year shall be fifteen or less dollars. If the vehicle fails, one re-inspection will be provided free of charge at any inspection station operated under contract to the state, provided that the re-inspection is applicable to the same vehicle license year. Any additional re-inspection of a failed vehicle applicable to the same vehicle license year will require the payment of fifteen or less dollars.

[Statutory Authority: RCW 70.120.080, 70.120.170(4)(a), 46.16.015(2)(h) and 70.120.120.99-24-021 (Order 99-19), § 173-422-120, filed 11/22/99, effective 12/31/99. Statutory Authority: Chapter 70.120 RCW. 94-05-039 (Order 93-10), § 173-422-130, filed 2/8/94, effective 3/11/94. Statutory Authority: RCW 70.120.170 (4)(a).. 93-20-010 (Order 93-15), § 173-422-130, filed 9/22/93, effective 10/23/93. Statutory Authority: Chapter 70.120 RCW. 93-10-062 (Order 91-46), § 173-422-130, filed 5/3/93, effective 6/3/93; 90-06-062, § 173-422-130, filed 3/6/90, effective 4/6/90. Statutory Authority: RCW 70.120.120.040(7). 87-02-051 (Order DE 86-32),§ 173-422-130, filed 1/7/87, effective 4/1/87. Statutory Authority: RCW 70.120.120. 82-02-027 (Order DE 81-32), § 173-422-130, filed 12/31/81; 80-03-070 (Order DE 79-35), § 173-422-130, filed 2/28/80.]

WAC 173-422-145 Fraudulent certificates of compliance/acceptance.

(1)(a) Obtaining or attempting to obtain a certificate of compliance by (i) providing false information or (ii) any fraudulent means; or (b) Obtaining or attempting to obtain a certificate of acceptance (i) through the use of receipts or other documentation containing false information, or (ii) any fraudulent means shall be construed as a violation of these rules implementing chapter 70.94 RCW as supplemented by chapter 70.120 RCW.

(2) Any person who commits such violation or who aids or abets another in committing the same shall be subject to a civil penalty not to exceed two hundred fifty dollars for each violation.

(3) For the purposes of this section the term "expended" refers to the net actual cost to the vehicle owner in the purchase of repairs or parts derived after the amount of any rebate, discount or cash-return has been subtracted.

(4) Any civil penalty imposed by the department hereunder shall be appealed to the pollution control hearing board as provided for in chapter 43.21 RCW.

[Statutory Authority: Chapter 70.120 RCW. 90-06-062, § 173-422-145, filed 3/6/90, effective 4/6/90. Statutory Authority: RCW 70.120.120, 43-21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-145, filed 11/23/83, effective 1/2/84.]

WAC 173-422-160 Fleet and diesel owner vehicle testing requirements. The department may authorize emission inspections by fleet operators including government agencies and the owners of diesel motor vehicles with a gross vehicle weight rating in excess of 8500 pounds or by an automotive service or testing facility engaged by the vehicle owner for such activity.

Authorizations to conduct emission tests and issue certificates of compliance under this section are limited to authorized fleet vehicles or diesel vehicles with a gross vehicle weight rating in excess of 8500 pounds.

(1) All persons engaged in testing of gasoline fleet or diesel vehicles must comply with all applicable provisions of this chapter except as approved by the department.

(2) All persons conducting tests for the purpose of issuing certificates for fleet or diesel vehicles shall be ecology authorized emission specialists.

(3) Legibly completed forms will constitute certificates of compliance for licensing purposes. Any person conduction testing under this section shall forward to the department within ten working days after the end of each month, a copy of each certificate of compliance issued during that month. Copies of each certificate of compliance shall be retained by the person issuing the certificate for at least two years from date of issuance. Alternative arrangements for providing and / or storing this information using an automated data storage device may be approved or required by the department.

Forms must be purchased from the department in advance of issuance through payment of fifteen or less dollars to the department for each certificate requested. Refunds or credit may be given for unused certificates returned to the department.

Payment for fleet forms is waived for state and local government fleets.

Test forms provided under this section are official documents. Persons receiving the forms from the department are accountable for each form provided.

Voided forms must be handled the sale as certificates of compliance. One copy shall be sent to the department within ten days after the end of the month in which the form was voided and one copy shall be retained by the person accountable for the forms for at least two years after date of voiding. Refunds will not be made for voided forms.

(4) All persons authorized to conduct fleet or government vehicle inspections under this section shall be subject to performance audits and compliance inspections by the department, during normal business hours.

(5) Fleet vehicles may be inspected any time between their scheduled license renewals.

(6) Certificates of acceptance may not be issued under this section.

[Statutory Authority: RCW 70.120.080, 70.120.170(4)(a), 46.16.015(2)(h) and 70.120.120.99-24-021 (Order 99-19), § 173-422-160, filed 11/22/99, effective 12/31/99. Statutory Authority: Chapter 70.120 RCW. 95-06-068 (Order 93-35), § 173-422-160, filed 2/28/95, effective 3/31/95; 94-05-39 (Order 93-10),§ 173-422-160, filed 2/8/94, effective 3/11/94; 83-10-062 (Order 91-46),§ 173-422-160, filed 5/3/93, effective 6/3/93; 90-06-062, § 173-422-160, filed 3/6/90, effective 4/6/90. Statutory Authority: RCW 70.120.120, 43-21A.080, 70.94.331 and 70.94.141(1). 83-35-115 (Order DE 83-31), § 173-422-160, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 82-02-027 (Order DE 81-32), § 173-422-160, filed 12/31/81; 80-03-070 (Order DE 79-35), § 173-422-160, filed 2/28/80.]

WAC 173-422-170 Exemptions. The following motor vehicles are exempt from the inspection requirements:

(1) Vehicles proportionally registered pursuant to chapter 46.85 RCW.

(2) New motor vehicles whose equitable or legal title has never been transferred to a person who in good faith purchases the vehicle for purposes other than resale; this does not exempt motor vehicles that are or have been leased.

(3) Motor vehicles that use propulsion units powered exclusively by electricity.

(4) Motor-driven cycles as defined in chapter 46.04 RCW as amended.

(5) Farm vehicles as defined in chapter 46.04 RCW as amended.

(6) Vehicles not required to be licensed.

(7) Mopeds as defined in chapter 46.04 RCW as amended.

(8) Vehicles garaged and operated out of the emission contributing area.

(9) Vehicles registered with the state but not for highway use.

(10) Used vehicles at the time of sale by a Washington licensed motor vehicle dealer.

(11) Motor vehicles fueled by propane, compressed natural gas, or liquid petroleum gas and so registered by the department of licensing.

(12) Motor vehicles who manufacturer or engine manufacturer provides information that the vehicle cannot meet emission standards because of its design. In lieu of exempting these vehicles, alternative standards and / or inspection procedures may be established.

(13) Motor vehicles whose registered ownership is being transferred between parents, siblings, grandparents, grandchildren, spouse or present co-owners and all transfers to the legal owner or a public agency.

(14) Vehicles less than five years old.

(15) Vehicles more than twenty-five year old.

[Statutory Authority: TCW 70.120.120. 00-22-120 (Order 00-15), § 173-422-170, filed 11/1/00, effective 12/2/00. Statutory Authority: RCW 70.120.080, 70.120.170(4)(a), 46.26.015(2)(h) and 70.120.120. 99-24-021 (Order 99-19), § 173-422-170, filed 11/22/99, effective 12/31/99. Statutory Authority: Chapter 70.120 RCW 96-23-030 (Order 96-11), § 173-422-170, filed 11/15/96, effective 12/16/96; 96-21-029 (Order 95-11), § 173-422-170, filed 10/9/96, effective 11/9/96; 95-06-068 (Order 93-35), § 173-422-170, filed 2/28/95, effective 3/31/95; 94-05-039 (Order 93-10), § 173-422-170, filed 1/9/94, effective 3/11/94; 93-10-062 (Order 91-46), § 173-422-170, filed 5/3/93, effective 6/3/93; 90-06062, § 173-422-170, filed 3/6/90, effective 4/6/90. Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order 83-31), § 173-422-170, filed 11/23/83, effective 1/2/84. Statutory Authority: RCW 70.120.120. 82-02-027 (Order DE 81-32), § 173-422-170, filed 12/31/81; 80-03-070 (Order DE 79-35), § 173-422-170, filed 2/28/80.]

WAC 173-422-175 Fraudulent exemptions.

(1) Obtaining or attempting to obtain an exemption from emission inspection requirements by false statements, or failure to comply with the exemption procedures established to implement WAC 173-422-170, shall be construed as a violation of these rules implementing chapter 70.94 RCW as supplemented by chapter 70.120 RCW.

(2) Any person who commits such violation or who aids or abets another in committing the same shall be subject to a civil penalty not to exceed two hundred fifty dollars for each violation.
(3) Any civil penalty imposed by the department hereunder shall be appealed to the pollution control board as provided for in chapter 43.21B RCW.

[Statutory Authority: RCW 70.120.120, 43.21A.080, 70.94.331 and 70.94.141(1). 83-23-115 (Order DE 83-31), § 173-422-17, filed 11/23/83, effective 1/2/84.]

WAC 173-422-190 Emission specialist authorization.

(1) To become an authorized emission specialist an individual shall:

(a) Pass a course of study, approved by the department; and

(b) Agree in writing to meet the requirements of subsection (2) of this section and all requirements of law or regulation regarding the servicing of motor vehicle emission control systems or the motor vehicle emission inspection program.

(2) To maintain certification, an authorized emission specialist shall:

(a) Successfully complete a department-approved course on emission repair within ninety days of being required to do so by the department unless an extension has been granted in writing by the department; and

(b) Sign, including the specialist identification number, all receipts and other forms required by the department for emission repairs or adjustments performed. These receipts must be pre-numbered, preprinted with the business's name and address and clearly itemize all appropriate repairs performed by the specialist; and

(c) Record on all receipts:

(i) The vehicle's emission readings after appropriate repairs or the diagnosis and/or repair of problem(s) identified by the on-board diagnostic (OBD) during an emission inspection; and
(ii) A vehicle description including the license number and vehicle identification number (VIN); and
(iii) Any missing or inoperative primary emission control components; and
(iv) Any further recommended appropriate repairs; and

(d) Not tamper with emission control systems, including adjusting an engine outside of the manufacturer's specifications (chapter 173-421 WAC); and
(e) Not obtain or attempt to obtain a certificate of compliance, a certificate of acceptance (repair waiver) or an exemption from the inspection requirements by providing false information or by any fraudulent means (chapter 173-422 WAC); and
(f) Not aid or abet any individual in committing a violation of chapter 173-421 or 173-422 WAC.

(3) The certification of an authorized emission specialist may be revoked for a first violation of chapter 173-421 WAC or WAC 173-422-145 , for a period of no more than one ear, and may be permanently revoked for a second violation of chapter 173-421or 173-422 WAC.

He certification of an authorized emission specialist may be temporarily revoked for violation of subsection (2) of this section and may be permanently revoked for continued willful violation of subsection (2) of this section.

An authorized emission specialist whose certification is revoked permanently or temporarily may appeal to the pollution control hearings board as provided for in RCW 43.21B.310.

(4) An authorized emission specialist whose certification has been temporarily revoked may reapply for certification twelve months after the date of revocation by applying to the department and meeting all requirements of subsection (1) of this section. An application for certification by a permanently revoked authorized emission specialist will be denied.

[Statutory Authority: RCW 70.120.120. 02-12-072 (Order 02-04), § 173-422-190, filed 6/3/02, effective 7/4/02. Statutory Authority: Chapter 70.120 RCW. 96-21-029 (Order 95-11), § 173-422-190, filed 10/9/96, effective 11/9/96; 95-06-068 (Order 93-35), § 173-422-190, filed 2/28/95, effective 3/31/95; 90-06-062, § 173-422-190, filed 3/6/90, effective 4/6/90.]

WAC 173-422-195 Listing of authorized emission specialists.

(1) A list of authorized emission specialists will be available to the public. Specialists will be listed under one employer's business name when the business is approved for listing. The list will be updated by the department at least once every six months.

(2) The employer's business name and address will be listed by the department, when the employer agrees in writing to:

(a) Require the use of a properly maintained and correctly calibrated exhaust analyzer and a scan tool capable of communicating with the on-board diagnostic (OBD) systems installed on all U.S. Environmental Protection Agency certified 1996 model year and newer gasoline vehicles to diagnosis emission test failures and as a final check for emission repairs or adjustments.

(b) Have all emission repairs or adjustments performed by an authorized emission specialist;

(c) Require the authorized emission specialist to sign the customer's receipt for emission repairs or adjustments, and to record the vehicle's emission readings or which problem(s) identified by the on-board diagnostic (OBD) system during an emission inspection that have been diagnosed and/or repaired on the receipt after the work is completed;

(d) Require that all employees not aid or abet any person to tamper with emission control systems, including adjusting a vehicle outside of the manufacturer's specifications (chapter 173-421); and

(e) Require that all employees not aid or abet any person to obtain a fraudulent certificate of compliance, certificate of acceptance or an exemption from the inspection requirement (repair waiver) (chapter 173-422 WAC).

(f) Notify the department when an authorized emission specialist begins or ends employment.

(3) An employer may be removed from the authorized emission specialist list for a first violation of chapter 173-421 or 173-422 WAC for a period of no more than one year and may be permanently removed after a second violation of Chapter 173-421 or 173-422 WAC.

An employer may be temporarily removed from the authorized emission specialist list when failing to comply with the requirements of subsection (2) of this section and may be permantaley evoked for continued and willful violation of subsection (2) of this section.

(4) An employer who has been temporarily removed from the authorized emission specialist list may reapply for listing twelve months after the date of removal from the listing by applying to the department and meeting all requirements of subsection (2) of this section. An application for listing from an employer permantely removed from the authorized emission specialist list will be denied.

(5) An employer who is removed from an authorized emission specialist list or denied listing in an authorized emission specialist list may appeal to the pollution control hearings board as provided for in RCW 43.21B.310.

(6)(a) An employer approved for listing may display the "state authorized emission specialist" sign available from the department. Any employer advertising or providing of information to the public based on the department's certification of an authorized emission specialist must be discontinued immediately when the employer no longer meets the requirements.

(b) An employer violating (a) of this subsection shall be subject to a civil penalty not to exceed two hundred fifty dollars for each violation.

(c) A civil penalty imposed by the department may be appealed to the pollution control hearings board as provided for in RCW 43.21B.310.

[Statutory Authority: RCW 70.120.120. 02-12-072 (Order 02-04), § 173-422-195, filed 6/3/02, effective 7/4/02. Statutory Authority: Chapter 70.120 RCW. 95-06-068 (Order 93-35), § 173-422-195, filed 2/28/95, effective 3/3/195; 90-06-062, §, filed 3/6/90, effective 4/6/90.]

Appendix5: Test Station Information

Addresses
Larger vehicles should use stations printed in italics.

Clark County
Vancouver, W (360.574.3731)…..14110 NW 3rd Ct
Vancouver, E (360.254.2173)…..1121 NE 136th Av

King County
Auburn (253.939.1225)……..3002 A St SE
Bellevue (425.644.1803)……15313 SE 37th St
Redmond (425.882.3317)…….18610 NE 67th Ct
Renton (425.228.6453)…..…….....805 SW 10th St
Seattle, North (206.362.5173)...12040 Aurora Av N
Seattle, South (206.624.1254)…..…3820 Sixth Av S

Pierce County
Fife (253.926.3277)…… 4912 Pacific Hwy E
Puyallup (253.848-6399)……...10320 122nd St E
Lakewood (253.581.5243)…..…..…..3003107th St S

Snohomish County
Everett (425.347.5711)……1505 112th St SW
Lynnwood (425.771.7614)……19726 64th Av W
Marysville (360.658.1137)…..…..…..117 Beach Av

Spokane County
Spokane Valley (509.535.1326)16309 E Marietta St
Spokane North (509.482.7724)…920 N Hamilton St

Test Station Hours
Monday through Friday.....9:00 am – 5:00 pm
Saturday.....9:00 am – 1:00 pm
Closed Sundays and most State Holidays

Fees
First Test.....$15.00
First retest.....F R E E
Each additional retest.....$15.00
Cash, Check or Credit Cards Accepted

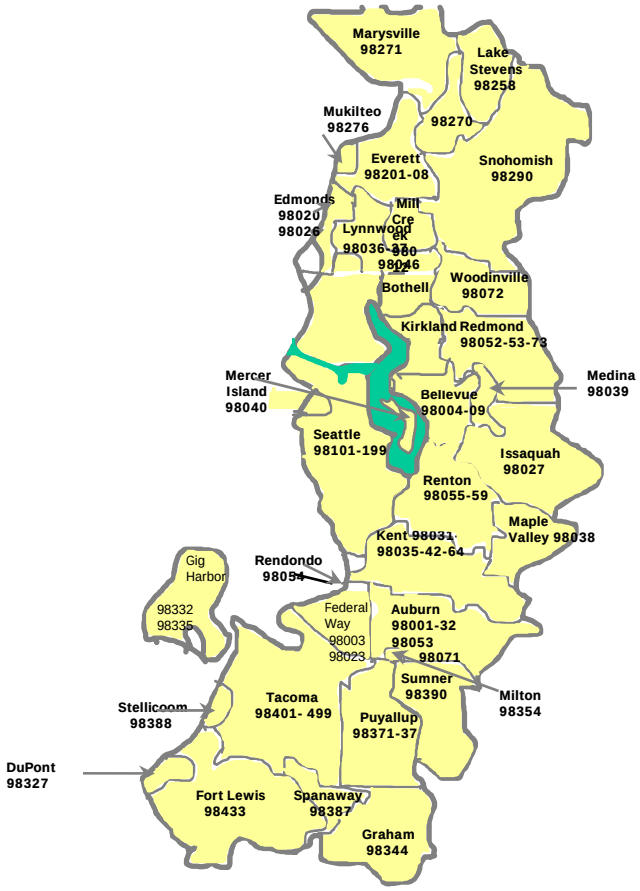
Public Information
Information Lines:
King County.....1-800 272-3780
Pierce County.....1-800 453-4951
Spokane County.....1-509 329-3491
Phone Hours.....8:00 am to 5:00 pm…..weekdays
Closed Saturday, Sunday and state Holidays

Emission Check Areas

The maps on this page and next show the Emission Check Program areas in Washington State. For a complete listing of ZIP Code areas, see WAC 173-422-050.

Ecology's Website:

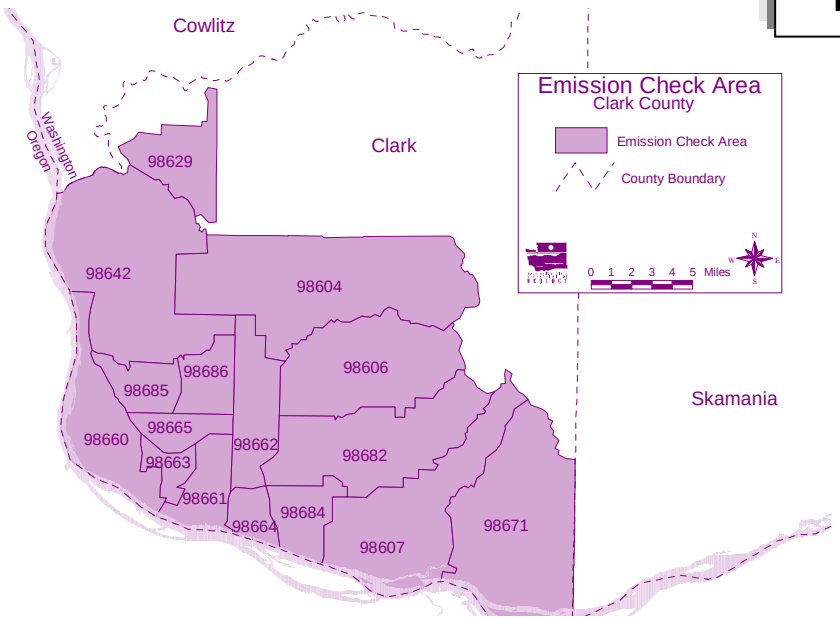
http://www.ecy.wa.gov/programs/air/cars/automotive_pages.htm



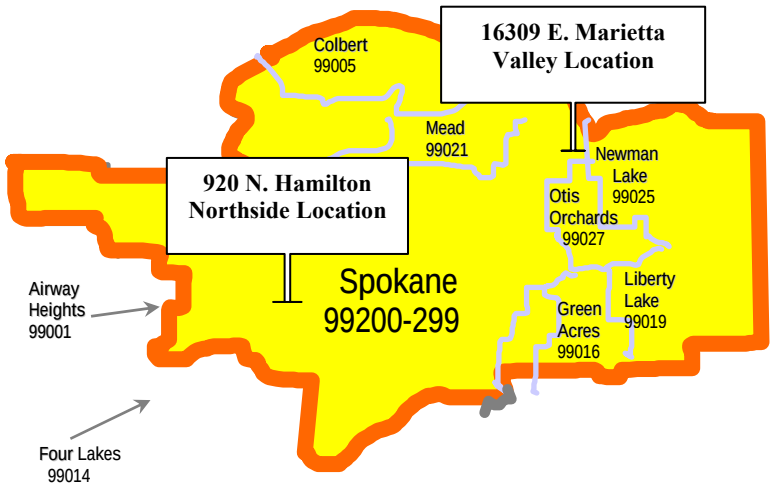
King – Pierce - Snohomish Co. Test Stations

Appendix 5: Test Station Information

Clark County Test Stations



Spokane County Test Stations



Appendix 6: Acceptable Parts and Repairs

Ecology generally considers these repairs or parts replacement acceptable under the waiver program, **as long as replacements or repairs address the diagnosed cause** of the emission test failure and meet the definition of appropriate repairs. *See box in middle.*

Acceleration valve
Adjust dwell timing mixture
Air charge temperature sensor
Air cleaner vacuum motor
Air cleaner vacuum motor thermistor
Air filter
Air filter housing (stock unit only)
Air flow chamber
Air flow meter
Air induction valve (Nissan)
Air injection manifold/tubes/system
Air pump
Air pump belt
Anti-backfire valve
Anti-dieseling switch/solenoid
Anti-knock sensor
Armature
Auxiliary air valve spring

Backing plate
Ballast resistor
Barometric pressure sensor (BAP)
Base plate (distributor)
Base plate (EGR)
Brake booster (Ecology approval)

Cam sensor
Cam gears/camshaft
Capacitor
Carbon canister; i.e. vapor/charcoal
Carburetor
Carburetor adjustments (mixture/speed)
Carburetor base plate
Carburetor cleaner (one can only)
Carburetor gaskets/jets/float
Carburetor isolator
Carburetor overhaul/repairs
Catalytic converter (EPA approved w/paperwork
Choke
Choke heater
Choke/pull off/stove
Choke relay
Choke stove
Coil/ignition
Coil wire
Cold start valve/injector
Compression test (w/readings for all cylinders wet & dry)
Compression leak down test
Computer/fuel/ignition
Condenser (distributor/ignition)
Coolant temperature sensor
Crank angle (position) sensor

Damper pulley (Ecology approval)
Dashpot
De-acceleration valve
Demodulator (AMC vehicles only)
Diagnostic time (emission related only)
DIS coil pack assembly
DIS module
Distributor
Distributor pick-up plate
Distributor Hall effect switch
Distributor reluctor
Distributor/shaft/bearings
Distributor/cap/rotor
Drive belt (air pump only)
Dynamometer diagnosis

ECM (engine control module)
ECU (engine control unit)
EOM/EEC/electronic brain control unit

Only *appropriate repairs* count toward a waiver. An "appropriate repair" is where you:
Diagnose the cause or causes of the failure.
Repair one or more of the causes.
Reduce at least one *failing* emission test reading, without a major increase in the other readings.(For example, if the car passes CO, but fails HC, the repair or adjustment that lowers HC should not raise the CO).

The waiver applies only to repairs on intact, properly configured engines and emission control systems. There is no Emission waiver cost limit to the customer to restore a vehicle to its legal configuration.
Contact Ecology when in doubt.

EFE valve/vacuum controlled heat riser
EFE grid (isolator GM)
EGR delay valve
EGR valve/gasket/control
EGR position sensor
EGR solenoid
EGR mounting plate (Ford)
Electric cooling fan switch
Engine overhaul (HC problems)
Exhaust manifolds (Ecology approval)
Exhaust/intake/valve(s)
Exhaust Valve oil seals
Exhaust valve keepers
Exhaust valve springs
Float
Float bowl
Fuel cap (Ecology approval)
Fuel filter
Fuel lines
Fuel pressure regulator (Fuel injected vehicles only)
Fuel pump/gasket (Ecology approval)
Fuel pressure regulator
Fuel rail (Ecology approval)
Fuel/vapor separator
Fuel/gasoline additive (one can only)

Hall effect switch (distributor)
Heat riser
Heat riser lubricant (one can only)
Idle air control valve
Idle solenoid
Idle speed control motor
Ignition module
Injector(s)
Injector cleaning
Injectors (FI vehicles only)
Injector "O" rings
Injector rebuilds
Intake manifold/gasket (stock only)
Intake valve
Intake valve oil seals
Intake valve springs
Intake valve keepers

Jet valves
Jet valve spring
Jet valve spring oil seal
Jet valve rocker arm

Lambda sensor
Leak-down test
Lifters (stock only)
Liquid check valve (requires fuel tank removal) (rollover)

MAP sensor
Magnetic pick-up assembly
Mass air flow sensor (MAF)
Mechanical advance distributor
Mechanical advance weights/springs
Meter rods
Mixture control solenoid

Needle and seat (Carbureted vehicles only)

Oil filter cap (Ecology approval)
Oil and filter change (Ecology approval)
One way vacuum valves
Oxygen sensor(s)

Pair valve (Nissan)

Note: Ecology approval is on a case by case basis. Each repair waiver will be judged on its own merits.
Note: Performance parts must have an EPA number or a SEMA green diamond label.

Appendix 6: Acceptable Parts & Repairs

Ecology generally considers these repairs or parts replacement acceptable under the waiver program, **as long as replacements or repairs address the diagnosed cause** of the emission test failure and meet the definition of appropriate repairs. *See box in middle.*

PCV filter
PCV grommet/hose
PCV valve
Piston rings (Ecology approval)
Piston rod bearings/overhaul (HC problems)
Points (distributor) stock only
Pole piece
Power valve
Pre-heater box (VW)
PROM
Pulse air lines/pump
Pulse air cleaner
Pulse air reed valve
Purge control valve/switch

Reluctor
Rocker arm

Scope/check/adjust (diagnosis)
Spark control/delay/solenoid/switches
Spark control delay valve
Spark plugs/wires (one set only)
Stator
Synchronize carburetors (imported vehicles only)

TAC (thermostatic air cleaner) parts/ sensors
Temperature sensor (coolant)
Thermal reactor (Mazda Rotary)
Thermal vacuum switches TVS
Thermostat (Ecology approval)
Thermostatic air cleaner flex hose
Thermostatic air cleaner sensor(s)
Thermostatic air cleaner stove
Thermostatic choke/element
Throttle body/injection parts
Throttle meter parts
Throttle plate/position sensor
Timing chain/chain tensioner/gears/belt
Trigger optical (distributor)
Trigger wheel (distributor)
Turbocharger (stock only)

Vacuum advance/retard
Vacuum amplifier (EGR)
Vacuum booster (Ecology approval)
Vacuum fittings/lines
Vacuum modulator (auto trans.)
Vacuum regulator valves/switches
Valve adjustment (Ecology approval)
Valve cover gaskets (if performed with adjustment)
Valve stem seals
Vapor canister/canister filter
Vapor canister purge solenoid
Vapor canister purge valve

Wide open throttle switch
Wiring repair (Ecology approval)

Only *appropriate repairs* count toward a waiver. An "appropriate repair" is where you:
Diagnose the cause or causes of the failure.
Repair one or more of the causes.
Reduce at least one *failing* emission test reading, without a major increase in the other readings.(For example, if the car passes CO, but fails HC, the repair or adjustment that lowers HC should not raise the CO).

The waiver applies only to repairs on intact, properly configured engines and emission control systems. There is no Emission waiver cost limit to the customer to restore a vehicle to its legal configuration.
Contact Ecology when in doubt.

Note: Ecology approval is on a case by case basis. Each repair waiver will be judged on it's own merits.
Note: Performance parts must have an EPA number or a SEMA green diamond label.

Appendix 7: Resources

Ecology provides this list for information only. The information and parts resources may be of use to you.

Ecology does not approve, recommend or endorse any of these resources.

BRITISH AUTO PARTS

British Auto Salvage, NY
New, used, new old stock for: Austin Healey, MG, Triumph, Jaguar, Lotus, Jenson. 1 - (315) 986-3097

CALIBRATION GAS & GAUGES (see phonebook)

CATALYTIC CONVERTERS (Aftermarket, new)

Products for Power
Catalytic converters, emission control parts.
1 – 800 - 323-2220

Tested Products
New, EPA approved or build to specs.
1 – 800 - 327-6481

Tri-D Industries
Catalytic converters, emission control parts.
1 – 800 - 533-5014

Walker Manufacturing
Catalytic converters, emission control parts.
1 – 800 - 435-7773

CATALYTIC CONVERTERS (Re-manufactured)

AM PHIL Products (PH), Galax, VA
1 – 800 - 541-7966 or 1 – (703) 236-6969

KGC Warehouse (KG), Humansville, MO
1 – (417) 276-3059

Miller Catalyze (MC), Hayward, CA
1 – 800 - 826-6615 or 1 – (510) 732-0622

Nova Catalytic Converters (NC), Dallas, TX
1 – (214) 748-1011

Smith Brothers Associated (SB), Buffalo, MO
1 - (417) 345-7166

SPACO (SP), Warmers, NY
1 – 800 - 536-8378

Tested Products Inc. (TP), Oak Park, MI
1 – 800 - 327-6481 or 1 - (313) 542-9911

CFC CERTIFICATION

ASE
Dan Flanagan, Seattle
1 – (206) 325-2100

IMACS Northwest Air Conditioning
1 – 800 733-1596

MACS
1 – (215) 541-4500 - Fax: 1 – (215) 679-4977

ASE (L-1)
Dan Flanagan, Seattle
1 – (206) 325-2100

EMISSION CONTROL PARTS (MISC)

Economy Smog Parts
Parts and systems except for M-B, Porsche, Citroen
1 – 800 – 327-1449

EXHAUST ANALYZER REPAIR

Allen
1 – 800 – 833-3377

Automotive Equipment Service (Allen), Seattle
Dennis Fagan; 1 – (206) 858-6644
pager (206) 917-0696

Bear
1 – 800 – 288-2327

Don Henson
1 – (206) 933-8330

Appendix 8: Common Forms

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Emission Check

You're on the Road to Cleaner Air.

State of Washington • Department of Ecology

Eastern (509) 329-3530 ♦ Southwest 1-800-453-4951 ♦ Northwest (425) 649-7000

Technical Assistance Report

Results: □ Pass □ Fail*

Business Name:_____

City:_____ **ShopNumber:**_____ **Date:**_____

(*See form ECY020-28 for explanation)

RECORDS CHECK

Yes	No		Yes	No	
□	□	Log for each analyzer properly maintained.	□	□	# Certificates of Acceptance discussed (This period__)
□	□	Monthly Analyzer Accuracy Report completed.	□	□	# Certificates of Acceptance discussed (Year to date__)
□	□	Personnel changes (Explain_____).	□	□	Proper testing procedures demonstrated or discussed.

Comments:

ANALYZER ACCURACY CHECK

Brand_____ **Model**_____

Note:_____

Audit Gas: Propane Conc._____**x Bench**_____ **=** _____**(ppm) CO=**_____**(%) CO_2 =**_____**(%)**

Target Values:	**HC**_____	**CO**_____	**CO_2**_____
Readings:	**HC**_____	**CO**_____	**CO_2**_____
Error:	_____	_____	_____
Error Limits:	**HC±30**	**CO ±0.20**	**CO_2 ±0.50**

Leak Check:_____

OBD II SCANNER

Brand_____**Model:**_____**Notes:**_____

Ecology Representative:_____**Phone:**_____

ECY 020-62 (6/04) f you require this publication in an alternate format, please contact Tami Dahlgren at (360) 407-6830

or TTY (for the speech or hearing impaired) 711 or 1 (800) 833-6388

Ecology is an Equal Opportunity Affirmative Action Employer

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Emission Check

You're on the Road to Cleaner Air.

State of Washington • Department of Ecology

Eastern (509) 329-3530 ♦ Southwest 1-800-453-4951 ♦ Northwest (425) 649-7000

Monthly Analyzer Accuracy Report

(To be conducted every 30 days and / or after relocation or repair)

(1) Date	(2) Leak Check *P / F	(3) Bottle Pressure 25lbs +	(4) HC Value (ppm)	(5) P.E.F. (Bench)	(6) HC Target	(7) HC at probe	(8) HC Error +/- 30 ppm	(9) CO% Target	(10) CO% at probe	(11) CO Error +/- .20%	(12) Analyzer * P / F	(13) Name or Initial of AES

***(If your analyzer fails leak check, HC or CO readings, you must notify your Ecology Representative within 24 hours).**

ECY 020-19 (6//04)

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WASHINGTON STATE DEPARTMENT OF ECOLOGY

Emission Check

You're on the Road to Cleaner Air.

State of Washington • Department of Ecology

Eastern (509) 329-3530 ♦ Southwest 1-800-453-4951 ♦ Northwest (425) 649-7000

We can't test your vehicle.

We're sorry for the inconvenience, but we are unable to test your vehicle due to the problem(s) checked below. There is **no fee** charged at this time. **We recommend making *only* the check marked repairs or adjustment for now.**

Here's why and what to do.

This will make it possible to test your vehicle. Further repairs will be needed only if your vehicle fails the emission check. Please take this notice with you when you take your vehicle in for repairs. Show it to the person who writes the work order.

Date:_____ / _____ / _____ Time:_____□ a.m. □ p.m. Station No:_____

Lane No:_____ License No:_____ x_____Mgr.

Why we can't inspect your vehicle

□ Exhaust system not intact

- □ **Tailpipe missing or corroded.** We could not insert the sample probe far enough to get a good sample.
- □ **Exhaust system leak.** We could not conduct a valid inspection. A leak can draw in fresh air which mixes with exhaust gasses. This can cause a false test result. Exhaust system leaks also can expose people inside the vehicle to harmful odorless fumes! We saw possible leaks in the:
- □ **Tailpipe**
- □ **Muffler**
- □ **Other:**_____

  What to do: Please have this problem repaired. We also recommend checking for and repairing any other exhaust system leaks. (Read "Notice to vehicle owner" at right.) Then return for an emission check.
- □ **Idle speed too high.** We cannot inspect a vehicle that idles faster than 1100 revolutions per minute (RPM) or the manufacturer's specified maximum idle speed, whichever is higher.

  What to do: Please **only** have the engine idle speed adjusted to the vehicle manufacturer's specifications. (Read "Notice to vehicle owner" at right). Then return for your emission check.
- □ **Safety.** We observed a condition that makes it unsafe for our staff to conduct the inspection.
- □ Fluid Leak
- □ Overheating
- □ **Gas Cap Missing**
- □ Other:_____

  What to do: Please have this condition corrected then return for your emission check.

□ **OBDII readiness codes**

On Board Diagnostics systems require that after resetting or cleaning the memory on the vehicle's computer system, the vehicle must complete a manufacturer's designed drive cycle before all computer monitoring systems are able to make a determination of monitor status. The monitor must be able to check the function of each system and determine if the individual sensor or emission component is operating properly.

The state regulation requires that if the **engine check light** is **off** while the vehicle is running and there are more than **2** readiness monitors **NOT READY,** for 1996 TO 2000 vehicles, and more than **1** readiness monitor for 2001 and newer vehicles, that the vehicle will be **REJECTED** until the appropriate monitors have completed the necessary drive cycle. Contact your vehicle dealership if there are questions about how to complete a drive cycle for your vehicle.

For more information

Please visit the test station office. Assistance also is available from the Department of Ecology.

Monday through Friday: **8:00 am to 5:00 pm**

Clark and Pierce Counties
1 (800) 453-4951 (voice) or 711 or 1 (800) 833-6388 (TTY)

King and Snohomish Counties
1 (800) 272-3780 (voice) or 711 or 1 (800) 833-6388 (TTY)

Spokane County
(509) 329-3491 (voice) or 711 or 1 (800) 833-6388 (TTY)

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or TTY (for the speech or hearing impaired) 711 or 1 (800) 833-6388

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WASHINGTON STATE DEPARTMENT OF ECOLOGY

Emission Check

You're on the Road to Cleaner Air.

Eastern (509) 329-3491 TTY (509) 329-3569 ♦ Southwest 1-800-453-4951 TTY (360) 407-6306 ♦
Northwest (425) 649-7000 TTY (425) 649-4259

Application for Automotive Repair Business Inclusion in The Ecology Emission Check Program

1. I wish to have my business's name and address included on the list of Ecology Authorized Emission Specialists that is given to motorist who vehicle fails an approved Emission Check Program inspection, as per WAC 173-422-195.
2. I understand that my business must meet the requirements of the Emission Check Program to be included on the list, as per WAC 173-422-195.
3. I understand that businesses that meet the requirements of the Emission Check Program may display the Ecology Authorized Emission Specialist poster and use the logo in such a manner that it can be removed immediately from public view in the event my facility is removed or suspended from the program by Ecology, or if my business fails to meet the requirements of the Emission Check Program, as per WAC 173-422-195.
4. I understand that a vehicle that has failed an approved Emission Check Program inspection must have all its emission control devices intact and operational or repaired by an Ecology Authorized Emission Specialist before it will be considered for a certificate of acceptance (a Waiver) at the Emission Check station or by Ecology, as per RCW70.120.070.
5. I agree to maintain an exhaust gas analyzer and / or an OBDII compliant scanner that meets or exceeds the requirements of the Emission Check Program and that I am solely responsible for its maintenance, calibration and repair. I will notify Ecology in the event that (my analyzer or scanner) is not functioning properly, as per WAC 173-422-195.
6. I agree to employ an Ecology Authorized Emission Specialist who will perform appropriate emission related diagnoses, repairs and / or adjustment on vehicles that fail an Ecology Emission Check Program inspection. I will notify Ecology in the event that I no longer have an Authorized Emission Specialist in my employ.
7. I understand that this specialist must sign, date, and record the final emission readings or OBDII DTC on the customer's repair receipt (where applicable), as per WAC 173-422-195.
8. I agree to allow Ecology staff access to my facility during normal business hours to conduct a Technical Assistance Visit and check the accuracy of my exhaust analyzer and / or OBDII compliant scanner, the status of repair personnel, and to ensure that proper procedures are being followed to confirm that I am in compliance with the Emission Check Program, as per Chapter 173-421 WAC and 173-422 WAC.

Business Name: _____

Printed Name: _____

Signature: _____

Position (Owner / Manager): _____

Ecology Representative: _____ **Dated:** _____

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State of Washington ● Department of Ecology

Eastern (509) 329-3530 ♦ Southwest 1-800-453-4951 ♦ Northwest (425) 649-7000

Motorist Technical Assistance Form

Date of contact:_____ **Date resolved:**_____

Results: Pass_____ **Fail**_____ **Waiver Issued**_____ **Extension Issued**_____

I/M Inspector:_____ Date:_____ Time:_____ Location:_____

Name:_____ Phone:_____ Phone:_____

License:_____ Make:_____ Model:_____ Year:_____ VIN:_____

Mileage:_____ Cylinders:_____ Catalytic Converter:_____ GVW:_____

Static Test:_____ Dyno Test:_____ Load HP:_____ Test Station:_____ Lane:_____

Failure: ***(Circle all that apply)*** ***Idle:*** **(CO) (HC) (CO_2)** ***Cruise:*** **(CO) (HC) (CO_2) OBDII___ VISUAL___**

30 Day Extension: **Yes / No** Date Due:_____ Vehicle is: **Stock / Tampered** Explain:_____

A.E.S. Shop:_____ Shop #_____ Phone:_____

A.E.S. #_____ Specialist Name:_____

2 Speed Field Test **(Loaded_____ Static_____)**

Cruise Readings: HC ppm_____ CO_____ CO_2_____

Idle Readings: HC ppm_____ CO_____ CO_2_____

OBDII Field Test

FUEL CAP_____

DIAGNOSTIC TROUBLE CODES PRESENT?_____

OPACITY TEST

Snap	**#1_____**	**#6_____**
	#2_____	**#7_____**
	#3_____	**#8_____**
	#4_____	**#9_____**
	#5_____	**#10____**

Notes:

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Emission Check

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State of Washington ● Department of Ecology

Eastern (509) 329-3530 ♦ Southwest 1-800-453-4951 ♦ Northwest (425) 649-7000

Notice of Action Required

Facility:_____ **Shop No:**_____ **Date:**_____

The Department of Ecology Emission Check staff has recently conducted a Technical Assistance visit at your facility. Your facility has a deficiency that will temporarily exclude your shop from the Authorized Emission Specialist Program.

The requirement(s) your facility does not meet and the required corrective action(s) are listed in the checked items below and must be corrected by:_____.

□ **Employ An Authorized Emission Specialist** who performs all emission related repairs, diagnosis, and/or adjustments on vehicles failing a State approved vehicle emission inspection. The specialist must sign, date and record final emission readings on the customer's repair receipt and note recommended repairs, as per 173-422-195(2)(b) WAC.
Action Required: Hire an Authorized Emission Specialist. Call your regional office for class information if you have a qualified candidate.

□ **Maintain an exhaust analyzer and/or an OBDII compliance scanner in good working order** meeting the accuracy checks of the Department, as per 173-411-195(2)(a) WAC.
Action Required: Repair and/or recalibrate your analyzer and/or OBDII scanner to meet accuracy requirements. Call the regional office near you to schedule a Technical Assistance visit.

□ **Allow Ecology Emission Check staff to check** accuracy of the exhaust analyzer and/or OBDII compliance scanner, the status of personnel, and that proper procedures are being followed.
Action Required: Assist or allow Ecology Emission Check staff to check the accuracy of your exhaust analyzer and/or OBDII compliance scanner, and evaluate shop testing procedures. Call your regional office to schedule a Technical Assistance visit.

Repair invoice/receipts dated after today's date will not be accepted for Certificates of Acceptance at any Emission Check inspection station until the noted corrective actions have been completed by your facility and approved by Ecology's Emission Check staff.

Failure to notify your customers of your temporary removal from the Emission Check Program could result in removal from the program for up to one year as per 173-422-195(3) WAC.

Acknowledgment of Receipt
I, (Signature)_____, (Print)_____have read and understand this notice.

For additional technical assistance or additional time, contact:
Ecology Representative:_____Phone:_____

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WASHINGTON STATE DEPARTMENT OF ECOLOGY

Emission Check

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State of Washington ● Department of Ecology

Eastern (509) 329-3530 ♦ Southwest 1-800-453-4951 ♦ Northwest (425) 649-7000

Voluntary Withdrawal from the Emission Check Program

Facility:_____ **Date:**_____

I request that my shop be removed from the Washington State Emission Check Program as of today's date. My shop will be removed from all lists and publications.

Repair invoice / receipts dated after today's date will not be accepted for waivers at any Emission Check Station.
If in the future you would like your shop reinstated in our program, please contact your local Ecology regional office.

Acknowledgement of Receipt
I, the below named Service Manager / Owner, have read and understand this notice.

Signature

Print

Ecology Representative signature

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State of Washington ● Department of Ecology

Eastern (509) 329-3530 ♦ Southwest 1-800-453-4951 ♦ Northwest (425) 649-7000

Application for Authorized Emission Specialist Inclusion in the Ecology Emission Check and OBDII Check Program

1. I agree that as an Authorized Emission Specialist, I may have only one Authorized shop as my working shop and only sign receipts and test forms from that shop. I also agree that I must notify Ecology when I change employment.
2. I agree to verify that an accuracy check has been completed on the exhaust gas analyzer(s) and OBDII scanner monthly to meet (or exceed) the requirement of the Emission Check Program. I will report any maintenance or repair necessary to management. I will notify Ecology within 24 hours in the event that the analyzer(s) or OBDII scanner is not functioning properly.
3. I agree to do only appropriate emission related diagnosis, repairs and/or adjustments directed toward the emission failure in an attempt to meet the Emission Standards with the following exception: I can direct diagnosis, repairs and/or adjustments toward the replacement of missing or defective emission components.
4. I agree to all paperwork and documentation requirements. I will record the vehicle's emission readings after appropriate repairs or the diagnosis and/or repair of problem(s) identified by the on board diagnostic (OBD) system using an emission inspection. I will record the vehicle description including license number, and vehicle identification number (VIN). I agree to list any missing or inoperative primary emission control components and any further recommended repairs if needed. I will print and sign my name, including date time on the emission check report.
5. I understand that to do diagnosis, repairs, and/or adjustments that will qualify for a waiver, the business where I am employed must meet the requirements of the Emission Check Program.
6. I understand that businesses which meet the requirements of the Emission Check Program may display the Ecology Authorized Emission Specialist poster and use the logo in such a manner that it can be removed immediately from public view in the event the facility is removed or suspended from the program by Ecology, or if the business fails to meet the requirements of the Emission Check Program.
7. I understand that only diagnosis, repairs, and/or adjustments performed by an Ecology Authorized Emission Specialist will be considered for a certificate of acceptance (a waiver) from an Emission Check station, or from Ecology. All emission control devices must be intact and operational.
8. I understand that Ecology staff will be checking the accuracy of the exhaust analyzer(s) and OBDII scanner, reviewing the log of testing, calibrations, and maintenance of each exhaust analyzer, and OBDII scanner, and ensuring that proper procedures are being followed to confirm that I am in compliance with the Emission Check Program.

School Attended:_____ Score:_____ Completion Date:_____

ASE L-1 Certified: □ Yes □ No If yes, please attach a copy of certification. Ecology Test: □ Yes □ No

Type of OBDII compliance scanner:_____Model:_____

Facility Name:_____Phone:_____

Print your Name:_____Phone:_____

Signature:_____Date:_____

Ecology Rep:_____Date:_____

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Appendix 9: Washington's Auto Repair Law

Material in this appendix was provided by the Attorney General's Office

Your Customer Rights:

- A written estimate for repairs which will cost more than $100, unless waived or absent face-to-face contact;
- Return or inspection of all replaced parts. If requested at time of repair authorization;
- Authorize orally or in writing any repairs which exceed the estimated total pre sales tax cost by more than ten percent.
- Authorize any repairs orally or in writing if your vehicle is left with the repair facility personnel.

If you have authorized a repair in accordance with the above information, you are required to pay for the costs of the repair prior to taking the vehicle from the premises.

Dealing with an auto repair facility:

The best time to look for an auto repair facility is before you need one, when you have the time to shop around.

In looking for an auto repair facility, ask for recommendations. The best referrals are from family and friends who have had positive experiences with a repair facility.

But ask the facility for references, too, and check them out. You can also check with the Better Business Bureau and AAA to see what kind of consumer record the facility has.

Once you've found a facility you like, which is technically competent to do the work, there are two key rules to remember: only work that you authorized can be performed and you should keep written records.

The first step in dealing with a repair problem is to check if the parts or service you need are covered by an existing warranty. If so, ask if the repair facility will honor the parts warranty and whether it provides in writing a warranty for its own work.

Then go to the facility to get an estimate including condition to be repaired, parts, needed, and anticipated labor charge. Be sure to determine in advance if there is a diagnostic charge.

In dealing with the facility, there are four things to watch out for:

1. You must ask for the damaged parts to be shown or returned to you, if you would like them, **before work is done.**
2. If the repairs cost more then $100, you're entitled to a written estimate. You must authorize the work to be done. The repair facility must also provide you with a written invoice after all work are performed. Compare it to the original authorized estimate.
3. The facility owner/manager can hold the car until the bill is paid, if the customer refuses to pay charges which are within 110 percent of the original, **authorized** estimate (including any subsequent authorizations). The facility must notify you and receive either your written or oral approval to do any extra work that will increase the cost more than 10 percent above the original, authorized estimate.

   For example, the facility may hold your car until you pay the bill if you approved a $200 estimate and the final bill was less than $220 before taxes. You must pay the approved estimate cost, and up to 10 percent more, to get a vehicle back from a facility.
4. Make sure you have a copy of the warranty if one is provided. **Get all promises in writing.**

Resolving disputes:

The hints we've offered so far will help in getting through the typical experience at an auto repair facility. However, some problem inevitably arises.

Authorized repairs proved inadequate to repair car. Before you blame the facility owner/manager for ripping you off, consider whether you authorized the needed repairs or tried to get by with the minimum which proved insufficient. All too often we gamble on the cheap fix and it fails.

Appendix 9: Washington's Auto Repair Law

The customer is not satisfied with the vehicle after the repair. If the facility offers a warranty, return to the facility. Discuss the situation with the owner/manager and determine where the problem lies: Miscommunication, poor workmanship, faulty parts.

Once you've identified the problem, address it. Don't become the problem. Get organized and be prepared to negotiate.

Try to work it out in a reasonable manner with the facility owner/manager. Show copies of the estimate or other documentation which support your position. Listen carefully to the facility's position and be prepared to compromise to a fair solution.

No luck with the facility owner? Four options include:

1. The Consumer Resource Center, Office of the Attorney General offers mediation services.
2. Ask the owner/manager to resolve the dispute through arbitration/mediation (for example, AAA, the Better Business Bureau, or a Dispute Resolution Center).
3. Pursue the case through Small Claims Court; however, you should note that you can only sue for money in Small Claims Court. The Court cannot order your car fixed.
4. Consult an attorney for further options.

Violations of the law

A violation of the auto repair law is also a violation of the Consumer Protection Act. This means the consumer can recover up to three times the amount of damages (up to $10,000) in a successful court action.

Under the law (RCW 46.71) the following specific actions are unfair and misleading:

Advertising that is false, deceptive, or misleading.

Materially misstating the estimated price for a specific repair procedure (low balling).

Retaining payment from a customer for parts not delivered or installed, or a repair procedure not performed.

Unauthorized operation of a customer's vehicle for purposes not related to repair or diagnosis.

Failing or refusing to provide a customer, upon request, a free copy of any document signed by the customer.

Warranties: There is no such thing as a "standard warranty" on repairs. Make sure you understand what is covered under your warranty and get it in writing. Warranties are usually subject to limitations, including: mileage, deductibles, business authorized to perform warranty work, and special procedures required to obtain reimbursement. Compare warranty policies. The repair facility must make available any express warranty provided by the repair facility to the customer that covers repairs performed on the vehicle. Call the Consumer Line for more information.

For further information:

The Attorney General's Office provides information and informal mediation to consumers and businesses. If you have a question or want to report a problem, please contact one of the Consumer Resource Centers listed below.

The Attorney General is prohibited from acting as a private attorney on an isolated complaint. If you complaint demands immediate legal action, you should consider private legal action in Small Claims Court (no attorney necessary) if your claim is under $4000. If your complaint involves more than $4000 you should seek a private attorney. You might also consider arbitration.

Other sources of information are AAA, (206) 448-5353, and you're local Better Business Bureau.

Consumer Resource Center—Office of the Attorney General:

Statewide	**1 (800) 551-4636 Voice;**	**1 (800) 276-9883 TTY**
Bellingham	**1 (360) 738-6185**	
Olympia	**1 (360) 753-6210**	
Seattle	**1 (206) 464-7744 Voice;**	**1 (206) 464-7293 TTY**
Spokane	**1 (509) 456-3123**	

Appendix 9: Washington's Auto Repair Law

Tacoma	**1 (206) 597-3832**
Tri-Cities	**1 (509) 734-7140**
Vancouver	**1 (360) 759-2150**

Consumer line has taped information on a number of automobile related issues. Call 1 (800) 551-4636 to get information on Choosing An Auto Repair Facility; Taking Your Car to the Repair Facility; Auto Repair Problems; Auto Emission Testing; After Your Car Fails the Emission Test.

For more information on Washington's Motor Vehicle Lemon Law call: 1 (800) 541-8898 or in Seattle 587-4240. The Attorney General's Office has a policy of providing equal access to its service. If you need to receive this information in an alternated format, please call 1 (206) 464-6431. The hearing impaired may call 1 (800) 276-9883 Statewide or in Seattle at 464-7293.

Appendix 10: Air / fuel Information

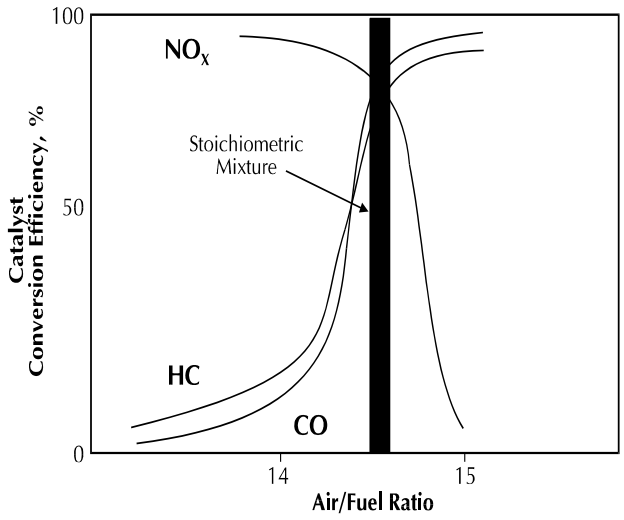
Exhaust gas relationship charts

These charts show how changes in the air / fuel mixture affect the levels of gases in gasoline engine emissions. The ideal, or "Stoichiometric", air / fuel ration is 14.7 to 1. Manufacturer-recommended engine settings are designed to achieve this balance.

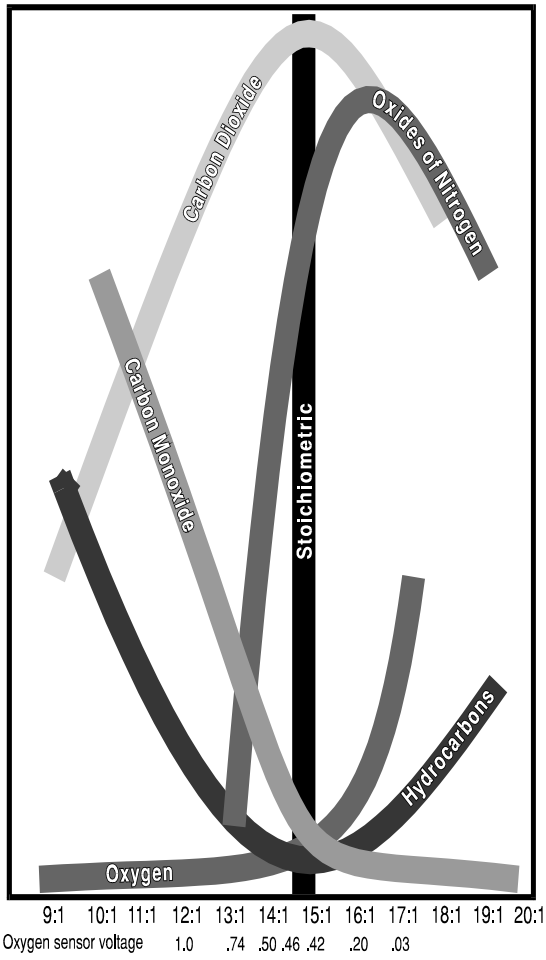
To Stoichiometric air / fuel ratio produces these benefits:

- Highest fuel efficiency; all the fuel is used.
- Lowest CO and HC Emissions.
- Maximum conversion of CO, HC and NO_x by the catalyst.

Catalyst Efficiency Chart



Air:Fuel Ratio Chart



Appendix 10: Air / fuel Information

Common Causes of High Readings in Gasoline Vehicles

Use these table as a staring point for diagnosing high readings

Check these items for each type of failure	
Idle	**Cruise (Loaded test or 2500 rpm)**
High HC Vacuum leaks (hoses, EGR valve, intake manifold, carburetor) Incorrect ignition timing and/or idle speed Incorrect air/fuel mixture Ignition system malfunction (plugs, wires, points, dwell, etc.) Faulty computer controls Air injection system failure Catalyst failure Mechanical problem	**High HC** Vacuum leaks (hoses, EGR valve, intake manifold carburetor) Incorrect ignition timing or idle speed Incorrect air/fuel mixture Ignition system malfunction (plugs, wires, points, dwell, etc.) Faulty computer controls Air injection system failure Catalyst failure Mechanical problem
High CO Incorrect carburetor air/fuel mixture adjustment Dirty air cleaner Incorrect choke adjustment Incorrect carburetor float bowl adjustment Faulty computer controls Faulty fuel injector Air injection system failure Catalyst Failure Contaminated crankcase	**High CO** Incorrect carburetor air/fuel mixture adjustment Dirty air cleaner Incorrect choke adjustment Incorrect carburetor float bowl adjustment Sticky fuel injectors Faulty computer controls Air injection system failure Catalyst failure Flooded charcoal canister

Check these possible causes for non-optimal readings

For Washington's gasoline emission standards,. Always use the manufacturer's specification when repairing or adjusting a vehicle.

Gases	Idle		Cruise (loaded test or 2500 rpm)		Condition Possible causes
	Catalyst	Non-catalyst	Catalyst	Non-catalyst	
HC (ppm CO (%) CO_2 (%) O_2 (%)	0 – 150 0 – 1.5 13.0 – 16.5 0.1 – 0.4	75 – 250 0.5 – 3.0 12.5 – 14.0 0.1 – 2.0	0 – 75 0 – 0.8 13.5 – 16.5 0.1 – 1.25	25 – 150 0.1 – 1.5 12.5 – 14.0 0.1 – 2.0	**OPTIMAL Four-Gas Readings** *Good performance, economy and emissions*
HC (ppm CO (%) CO_2 (%) O_2 (%)	0 – 150 Above 3 8 – 11 0.0 – 0.5	75 – 250 Above 4 8 – 11 0.0 – 0.5	0 – 75 0.0 – 0.25 9 – 12 0.0 – 0.5	0 – 100 0.0 – 0.75 9 – 12 0.0 – 0.5	**Rich Mixture** Carb. Set too rich; canister purge; PCV; injector; air filter; cracked exhaust manifold (O_2); crankcase contaminated; fuel pressure.
HC (ppm CO (%) CO_2 (%) O_2 (%)	0 – 150 0 – 1.0 10 – 13 1.5 – 3.0	75 – 250 0 – 1.0 10 – 13 1.5 – 3.0	0 – 75 0 – 0.25 11.5 – 13 1.0 – 2.0	0 – 100 0 – 7.5 11 – 13 1.0 – 2.0	**Lean Mixture** Low fuel pressure; vacuum leaks; restricted fuel injectors.
HC (ppm CO (%) CO_2 (%) O_2 (%)	50 – 850 0 – 0.3 5 – 9 4 - 9	400 – 1200 0 – 0.75 5 – 9 4 - 9	50 – 750 0 – 0.3 6 – 10 2 - 7	400 – 1200 0 – 0.75 6 – 10 2 - 7	**Lean Misfire** Severe air leak; bad spark plug; bad spark plug wire; clogged injectors; fuel pressure and volume low.
HC (ppm CO (%) CO_2 (%) O_2 (%)	50 – 850 0.1 – 1.5 6 – 8 4 - 10	over 1000 0.5 – 3.0 6 – 8 5 - 10	50 – 750 0 – 0.8 8 – 10 4 - 10	over 1000 0.1 – 1.5 8 – 10 5 - 10	**Misfire** Over-advanced timing; fouled plugs; open grounded plug wire; EGR stuck

Check these items for each type of failure

CO_2 and O_2 figures provided for information only. Four-gas analyzers are not required.

Appendix 11: Customer Waiver Checklist

Drivers receive this guide at Emission Check stations when their vehicle fails an inspection. It is part of an information packet that includes a list of local AES shops. You can use this checklist to help your customers understand the waiver process.

- **Vehicle fails an emission check.**
- **Repairs are not covered under warranty (*gasoline vehicles only*).** You may be entitled to free repairs at a dealership or other authorized warranty repair facility. Most warranties cover only normal use and wear. Some damaged parts may not be covered under warranty.
  - **1981-1994 models:** Under federal law, emission control system repairs on vehicles with less than five years or 50,000 miles whichever comes first are covered under a manufacturer's warranty and must pass a re-check. For more information on warranty coverage, consult your owner's warranty information. Also see the brochures, *What You Should Know About Your Auto Emissions Warranty* and *If Your Car Just Failed An Emission Test, You May Be Entitled To Free Repairs,* available at your Emission Check station.
  - **1995 and newer models:** Most emission controls are covered under the standard performance warranty for two years or 24,000 miles, whichever comes first. Major emission control components such as the computer and catalytic converter are covered for eight years or 80,000 miles, whichever comes first. For details, check your vehicle's warranty documents.
- **Repairs are attempted.**
  - An Ecology Authorized Emission Specialist performs the work at an Ecology authorized repair facility.
  - You give your Vehicle Emission Test Report to your specialist who fills it out and returns it to you after doing the repair work.
  - The specialist signs, numbers and records final emission readings on a pre-printed, itemized repair invoice/receipt on which your vehicle is identified.
  - Your repair costs reach:
    - ♦ $100 for 1980 vehicles and older.
    - ♦ $150 for 1981 or newer vehicles.
  - All work is directed at correcting your vehicle's initial emission check failure.
- **Vehicle is re-checked** at an Emission Check station after the repair attempt. Bring your Vehicle Emission Test Report completed and signed by your specialist and the invoice/receipt.
  - **Vehicle passes** the recheck. The Emission Check station staff will issue a Vehicle Emission Test Report, which certifies your vehicle has passed. Present or send it to your vehicle-licensing agent when registering your vehicle. ***Disregard the rest of this checklist!***
  - **Vehicle fails the re-check.** ***Continue through this checklist!***
  - **Vehicle passes a visual inspection.** To obtain a waiver your vehicle must have:

Appendix 11: Customer Waiver Checklist

- **Vehicle passes a visual inspection.** To obtain a waiver your vehicle must have:
  - ♦ An engine that is correct for your vehicle. (Contact Ecology for details.)
  - ♦ All required emission control components are in place and operational.

  Note: There is no cost limit for replacing removed, altered or tampered emission control components. The cost limit applies only to diagnosis and *repairs* to otherwise intact engines and their pollution control systems.
- **Diagnosis and repairs were appropriate.** Station staff reviews documents to verify this.

■ **Certificate of Acceptance (repair waiver) is issued** to you by the Emission Check station staff. Your licensing agent will accept it in place of a passing Vehicle Emission Test Report when you register your vehicle.